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BUDGET ESTIMATES FISCAL YEAR 1987

ORIGINAL

Appropriation: Salaries and Expenses

February 1986

U.S. Nuclear Regulatory Commission

NUREG-1100
Volume 2

BUDGET ESTIMATES FISCAL YEAR 1987

Appropriation: Salaries and Expenses

February 1986

U.S. Nuclear Regulatory Commission

BUDGET ESTIMATES FOR
U.S. NUCLEAR REGULATORY COMMISSION
FISCAL YEAR 1987

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SUMMARY

SALARIES AND EXPENSES SUMMARY

Estimates of Appropriation

The budget estimates for Salaries and Expenses for FY 1987 provide for obligations of $405,000,000[1/] to be funded in total by a new appropriation.

Estimates of Obligations and Outlays

This section provides for the summary of obligations by program, the summary of financing these obligations, the analysis of outlays, obligations by function, the proposed appropriation language, and an analysis of the appropriation language.

The summaries of obligations include the Reimbursable program. It should be noted that the obligations related to this program are not financed by NRC's appropriated funds, but solely through reimbursable agreements with other Federal agencies.

The agency will deposit revenues derived from the license and inspection fees and enforcement actions to Miscellaneous Receipts of the Treasury.

The Summary of Obligations by Program indicates the total obligations for Direct and Reimbursable Programs for FY 1985, FY 1986, and FY 1987. The detailed justifications for direct program activities are presented in the same order as they appear in this summary table.

The FY 1986 Estimates do not reflect the 4.3% reduction required by the Balanced Budget and Emergency Deficit Control Act of 1985. The total NRC reduction is $17,974,000.

1/ Dollars are in thousands, except in text, where whole dollars are used; staff numbers are in full-time equivalents.

SUMMARY OF OBLIGATIONS

	Actual FY 1985	Estimate[1/] FY 1986	Estimate FY 1987
Direct Program:			
Nuclear Reactor Regulation..........	$ 86,521	$ 83,760	$ 79,840
Nuclear Material Safety and Safeguards....................	40,026	40,970	39,520
Inspection and Enforcement..........	94,586	98,240	98,540
Nuclear Regulatory Research........	149,959	134,710	113,460
Program Technical Support...........	30,755	30,290	30,525
Program Direction & Administration...	43,570	43,342	43,115
Total Obligations - Direct Program...................	$445,417	$431,312	$405,000
Reimbursable Program................	77	500	500
Total Obligations....................	$445,494	$431,812	$405,500
Offsetting collections from Federal Funds..............................	-65	-500	-500
Recovery of prior year obligations...	-4,842	-13,312	
Unobligated balance, start of year...	-5,699		
Unobligated balance, end of year....	13,312		
Budget Authority..................	$448,200	$418,000	$405,000

[1/] Estimates do not reflect the 4.3% reduction required by the Balanced Budget and Emergency Deficit Control Act of 1985. The total NRC reduction is $17,974,000.

FINANCING OF OBLIGATIONS

The financing of the estimated total obligations of $405,000,000 proposed in the budget estimate for FY 1987 is summarized in the following table:

Summary of Financing

	Actual FY 1985	Estimate[1/] FY 1986	Estimate FY 1987
Sources of Funds Available for Obligations:			
Recovery of prior year obligations...	$ 4,842	$ 0	$ 0
Unobligated balance, start of year...	5,699	13,312	0
Appropriated to NRC................	448,200	418,000	405,000
Subtotal	$458,741	$431,312	$405,000
Less: Unobligated balance, end of year..............................	13,312	0	0
Total Obligations - Direct Program	$445,429	$431,312	$405,000

[1/] Estimates do not reflect the 4.3% reduction required by the Balanced Budget and Emergency Deficit Control Act of 1985. The total NRC reduction is $17,974,000.

OUTLAYS FOR SALARIES AND EXPENSES

Outlays for FY 1987 are estimated at $418,000,000. The following analysis identifies funds available for outlays for each of the budget periods. This amount less the unexpended balance at the end of the period equals the outlays.

Outlay Analysis

	Actual FY 1985	Estimate[1/] FY 1986	Estimate FY 1987
Unexpended balance, beginning of year:			
Obligated...........................	$163,978	$136,913	$126,225
Unobligated.........................	5,699	13,312	0
Appropriation to NRC................	448,200	418,000	405,000
Total Funds Available for Outlays	$617,877	$568,225	$531,225
Unexpended balance, end of year:			
Obligated...........................	-136,913	-126,225	-113,225
Unobligated.........................	-13,312	0	0
Total Outlays.......................	$467,652	$442,000	$418,000

[1/] Estimates do not reflect the 4.3% reduction required by the Balanced Budget and Emergency Deficit Control Act of 1985. The total NRC reduction is $17,974,000.

SUMMARY OF BUDGET

OBLIGATIONS BY FUNCTION

	Actual FY 1985	Estimate[1/] FY 1986	Estimate FY 1987
Direct Program:			
Salaries and Benefits.................	$172,171	$171,500	$168,400
Program Support......................	213,758	193,780	170,760
Administrative Support..............	50,211	56,527	56,340
Travel................................	9,277	9,505	9,500
Total Obligations - Direct Program....................	$445,417	$431,312	$405,000
Reimbursable Program...............	77	500	500
TOTAL OBLIGATIONS.............	$445,494	$431,812	$405,500

[1/] Estimates do not reflect the 4.3% reduction required by the Balanced Budget and Emergency Deficit Control Act of 1985. The total NRC reduction is $17,974,000.

PROPOSED LANGUAGE - SALARIES AND EXPENSES

The proposed language is as follows:

Salaries and Expenses

For necessary expenses of the Commission in carrying out the purposes of the Energy Reorganization Act of 1974, as amended, and the Atomic Energy Act, as amended, including the employment of aliens; services authorized by 5 U.S.C. 3109; publication and dissemination of atomic information; purchase, repair, and cleaning of uniforms; official representation expenses (not to exceed $8,000); reimbursements to the General Services Administration for security guard services; hire of passenger motor vehicles and aircraft, $405,000,000 to remain available until expended: Provided, That from this appropriation, transfer of sums may be made to other agencies of the Government for the performance of the work for which this appropriation is made, and in such cases the sums so transferred may be merged with the appropriation to which transferred: Provided further, That moneys received by the Commission for the cooperative nuclear safety research program and the material access authorization program may be retained and used for salaries and expenses associated with those programs, notwithstanding the provisions of section 3302 of title 31, United States Code, and shall remain available until expended. (Energy and Water Development Appropriation Act, 1986)

Analysis of Proposed FY 1987 U.S. Nuclear Regulatory Commission Appropriation Language

1. FOR NECESSARY EXPENSES OF THE COMMISSION IN CARRYING OUT THE PURPOSES OF THE ENERGY REORGANIZATION ACT OF 1974, AS AMENDED, AND THE ATOMIC ENERGY ACT, AS AMENDED:

   42 U.S.C. 5841 et seq.

   42 U.S.C. 5841 et seq., the Energy Reorganization Act of 1974, established the Nuclear Regulatory Commission to perform all the licensing and related regulatory functions of the Atomic Safety and Licensing Board Panel, the Atomic Safety and Licensing Appeal Board, and the Advisory Committee on Reactor Safeguards, and to carry out the performance of other functions including research, for the purpose of confirmatory assessment related to licensing and other regulation, other activities, including research related to nuclear material safety and regulation under the provisions of the Atomic Energy Act of 1954, as amended (42 U.S.C. 5801 et seq.).

2. EMPLOYMENT OF ALIENS:

   42 U.S.C. 2201 (d) of the Atomic Energy Act of 1954, as amended, authorizes the Commission to employ persons and fix their compensation without regard to civil service laws

3. SERVICES AUTHORIZED BY 5 U.S.C. 3109:

   5 U.S.C. 3109 provides in part that the head of an agency may procure by contract the temporary or intermittent services of experts or consultants when authorized by an appropriation.

4. PUBLICATION AND DISSEMINATION OF ATOMIC INFORMATION:

   42 U.S.C. 2161 b

   42 U.S.C. 2161 b directs the Commission that it shall be guided by the principle that the dissemination of scientific and technical information related to atomic energy should be permitted and encouraged so as to provide that interchange of ideas and criticism which is essential to scientific and industrial progress and public understanding and to enlarge the fund of technical information.

5. PURCHASE, REPAIR AND CLEANING OF UNIFORMS:

5 U.S.C. 5901

5 U.S.C. 5901 authorizes the annual appropriation of funds to each agency of the government as a uniform allowance.

6. OFFICIAL REPRESENTATION EXPENSES:

47 Comp. Gen. 657

43 Comp. Gen. 305

This language is required because of the established rule restricting an agency from charging appropriations with the cost of official representation unless the appropriations involved are specifically available therefor. Congress has appropriated funds for official representation expenses to the NRC and NRC's predecessor AEC each year since FY 1950.

7. REIMBURSEMENT OF THE GENERAL SERVICES ADMINISTRATION FOR SECURITY GUARD SERVICES:

34 Comp. Gen. 42

This language is required because, under the provisions of the Federal Property and Administrative Services Act of 1949, specific appropriation is made to GSA for carrying out the function of protecting public buildings and property, and, therefore, NRC appropriations not specifically made available therefor may not be used to reimburse GSA for security guard services.

8. HIRE OF PASSENGER MOTOR VEHICLES AND AIRCRAFT:

31 U.S.C. 638a

31 U.S.C. 638a provides in part - "(a) unless specifically authorized by the appropriation concerned or other law, no appropriation shall be expended to purchase or hire passenger motor vehicles for any branch of the Government...."

9. TO REMAIN AVAILABLE UNTIL EXPENDED:

31 U.S.C. 718

31 U.S.C. 718 provides in part that no specific or indefinite appropriation shall be construed to be available continuously without reference to a fiscal year unless it is made in terms expressly providing that it shall continue to be available beyond the fiscal year for which the appropriation Act in which it is contained makes provision.

10. THAT FROM THIS APPROPRIATION, TRANSFERS OF SUMS MAY BE MADE TO OTHER AGENCIES OF THE GOVERNMENT FOR THE PERFORMANCE OF THE WORK FOR WHICH THIS APPROPRIATION IS MADE, AND IN SUCH CASES, THE SUMS SO TRANSFERRED MAY BE MERGED WITH THE APPROPRIATION TO WHICH TRANSFERRED:

    64 Stat 765, Sec. 1210

    64 Stat 765, Sec. 1210 prohibits the transfer of appropriated funds from one account to another or working fund except as authorized by law.

11. THAT MONEYS RECEIVED BY THE COMMISSION FOR THE COOPERATIVE NUCLEAR SAFETY RESEARCH PROGRAMS AND THE MATERIAL ACCESS AUTHORIZATION PROGRAM MAY BE RETAINED AND USED FOR SALARIES AND EXPENSES ASSOCIATED WITH THOSE PROGRAMS, AND SHALL REMAIN AVAILABLE UNTIL EXPENDED:

    26 Comp. Gen. 43

    2 Comp. Gen. 775

    Appropriated funds may not be augmented with funds from other sources unless specifically authorized by law.

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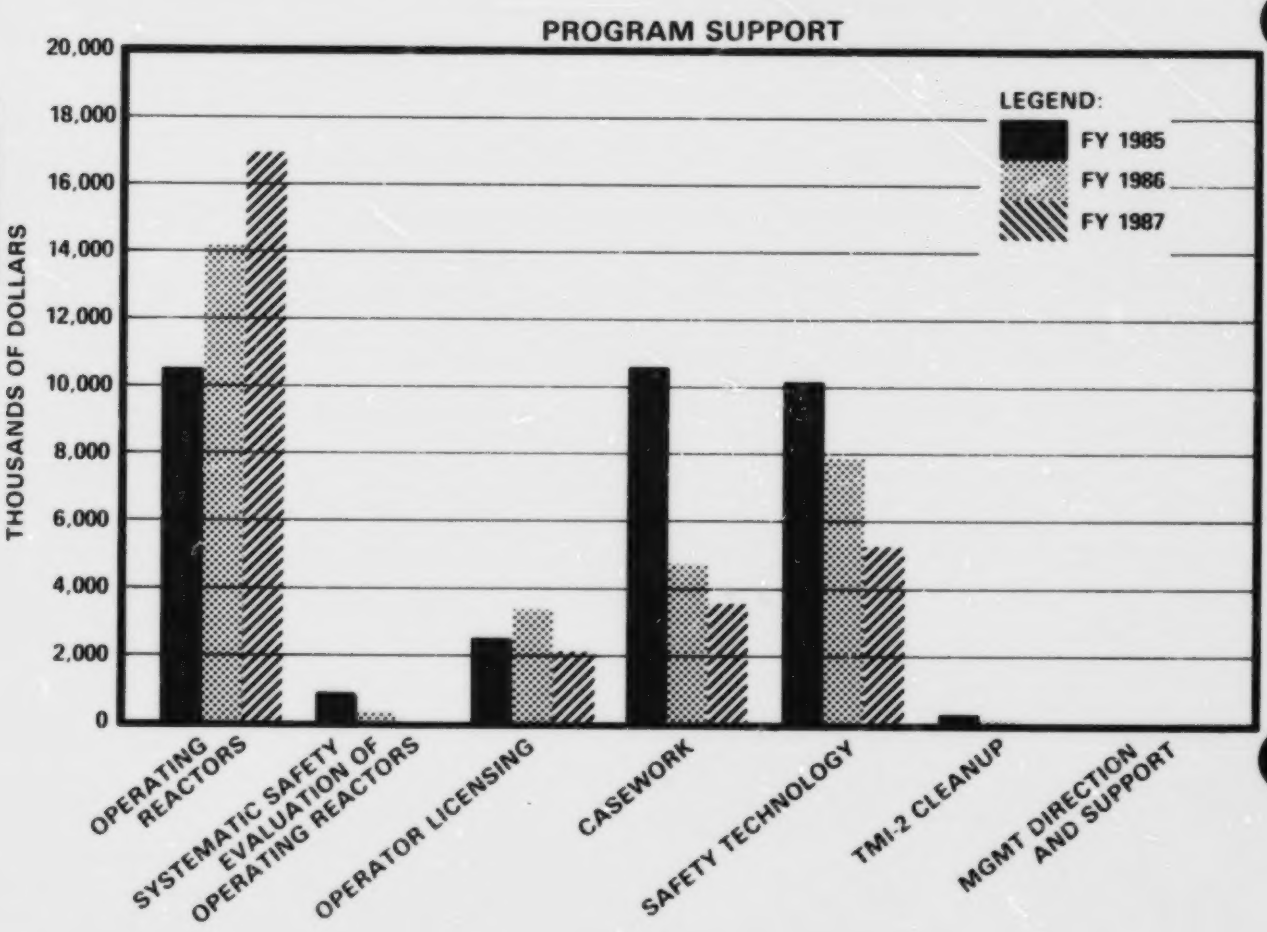
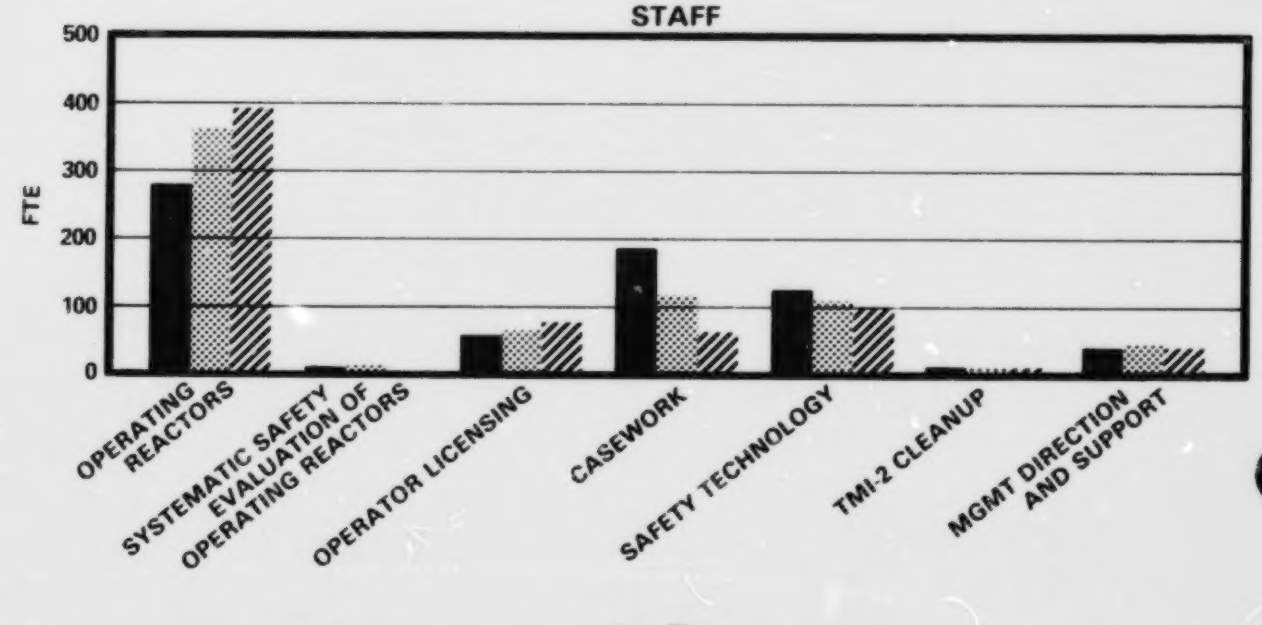
NUCLEAR REACTOR REGULATION

10 A.

NUCLEAR REACTOR REGULATION



PROGRAM SUPPORT



STAFF

NUCLEAR REACTOR REGULATION PROGRAMS

(Dollars are in thousands, except in text, where whole dollars are used; staff numbers are in full-time equivalents.)

Total FY 1987 estimated obligations............................ $ 79,840

Total Funds and Staff

	FY 1985 Actual	FY 1986[1] Estimate	FY 1987 Estimate
Salaries and Benefits	$ 39,440	$ 39,380	$ 38,340
Program Support	35,029	30,900	28,100
Administrative Support	10,604	12,010	11,950
Travel	1,448	1,470	1,450
Total Obligations	$ 86,521	$ 83,760	$ 79,840
(Staff)	(711)	(716)	(683)

Program Support Funds and Staff

The Nuclear Reactor Regulation staff and program support funds request is allocated to the major programs shown below. The program support funds are primarily for contractual work by Department of Energy laboratories and commercial contractors. The following narrative describes these programs and the reasons they are needed.

	FY 1985 Actual		FY 1986[1] Estimate		FY 1987 Estimate	
	Funds	Staff	Funds	Staff	Funds	Staff
Operating Reactors	$ 10,550	280	$ 14,149	361	$ 17,050	395
Systematic Safety Evaluation of Operating Reactors	926	5	400	8	0	0
Operator Licensing	2,539	59	3,415	68	2,110	78
Casework	10,584	189	4,850	119	3,650	61
Safety Technology	10,178	124	7,936	112	5,290	101
TMI-2 Cleanup	252	14	150	7	0	7
Management, Direction and Support	0	40	0	41	0	41
TOTALS	$ 35,029	711	$ 30,900	716	$ 28,100	683

---

[1] Estimates do not reflect the 4.3% reduction required by the Balanced Budget and Emergency Deficit Control Act of 1985. The total NRC reduction is $17,974,000.

DESCRIPTION OF PROGRAMS

The Office of Nuclear Reactor Regulation (NRR) is responsible for performing licensing activities associated with the construction and operation of nuclear reactors; reviewing applications and issuing licenses for reactor facilities as required by the Atomic Energy Act of 1954; and evaluating the health, safety, and environmental aspects of facilities and sites.

This responsibility involves the following major functions: (1) performing detailed safety, environmental, and antitrust reviews of applications for nuclear power plant construction or operating licenses; (2) conducting safety evaluations of licensees' implementation of requirements or changes to correct inadequacies or effect improvements in the design, operation, and economics of licensed reactors; (3) examining and licensing reactor operators; (4) evaluating issues related to the safety and regulation of reactors to determine if regulatory requirements should be deleted, added, or modified to provide necessary safety improvements or to increase the predictability and stability of the regulatory process; (5) providing for regulatory oversight of the TMI-2 cleanup operations.

OPERATING REACTORS PROGRAM

	FY 1985 Estimate	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 10,550	$ 14,149	$ 17,050
(Staff)	(280)	(361)	(395)

The Operating Reactors Program ensures that operating facilities maintain adequate levels of protection of public health and safety by providing the regulatory actions necessary to correct inadequacies in plant design and operation that are identified from; operating experience, reviewing unanticipated events, resolving generic safety issues, inspection findings, and NRC sponsored research. These regulatory actions include specific technical amendments to operating licenses, requests for information on pending technical issues, and NRC Orders.

The following technical activities are budgeted under this program.

(1) Engineering/systems reviews and issuance of safety evaluations, including amendments to facility licenses necessitated by safety improvements or operating exigencies; responses to requests for technical/operating information; and reviews affecting a class of plants that might result from resolved safety issues. Such reviews numbered 2,700 in FY 1985, and are projected to total 3,600 in FY 1986, and 3,700 in FY 1987. Examples of these reviews include such safety concerns as: Instrumentation to Follow the Course of an Accident, Hydraulic Shock Snubbers, Venting and Purging of Containments, Pipe Breaks in BWR SCRAM Systems, Anticipated Transients Without Reactor Shutdown, Steam Generator Failure, and Diesel Reliability.

(2) Conducting initial technical assessments of reactor events, in order to determine the safety implications of an event, on other operating reactors, and determining what, if any, immediate regulatory actions must be taken.

(3) Developing, in conjunction with the licensees, priority-based schedules for the completion of changes specified by new or revised NRC requirements, and changes proposed by licensees.

(4) Performing project management activities to ensure that safety reviews, including requests from the public, are efficiently and effectively managed, for 95 operating reactors in FY 1985, 105 in FY 1986, and 113 in FY 1987.

Additional funds and staff are required, over previous fiscal years, to achieve the timely review and completion of technical reviews, and provide the project management functions for the increasing number of operating reactors.

SYSTEMATIC SAFETY EVALUATION OF OPERATING REACTORS PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 926	$ 400	$ 0
(Staff)	(5)	(8)	(0)

The Integrated Safety Assessment Program (ISAP) will be discontinued as a separate program in FY 1987. The two plant pilot program, that was initiated in FY 1985 will be completed in FY 1986. Beginning in FY 1987, the concept of integrated safety assessments will be incorporated into the day-to-day operations within the Operating Reactors Program.

OPERATOR LICENSING PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 2,539	$ 3,415	$ 2,110
(Staff)	(59)	(66)	(78)

The Operator Licensing program consists of the preparation, administration, and grading of examinations of reactor operators, issuance of operator licenses, the requalification of operators, and certification of licensee training facility instructors.

Initial examinations are needed to ensure that power plants are staffed with qualified operators prior to issuance of the plant operating license. Replacement examinations are administered to operators who change to different facilities to ensure that they are qualified to operate at the different facility and that qualified operators are available at operating plants. The requalification program is an audit type effort to verify the continued proficiency of licensed operators. Operators of non-power reactors are also examined to ensure that they are qualified.

The anticipated workload for operator licensing is shown below:

Examinations

Exam Type	FY 1986	FY 1987
Initial	550	300
Replacement	1,392	1,440
Requalification	390	430
Instructor Certification	115	126
Nonpower reactor	50	50

This program also includes studies of general operator licensing problems, maintenance of an examination question bank, and improvements in the proficiency of examiners through training in examination content and balance, and in the development and writing of questions. These efforts are necessary to maintain and improve the efficiency and effectiveness of the Operator Licensing program. For example, the Examination Question Bank provides computerized questions for inclusion into examinations, thus reducing the time and effort for development of examinations.

The requested resources reflect a policy of conducting an increased proportion of examinations by in-house NRC staff.

CASEWORK PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 10,584	$ 4,850	$ 3,650
(Staff)	(189)	(119)	(61)

The Casework Program (licensing new reactors) consists of the review of applications for reactor construction permits, operating licenses, and standard plant designs. The reviews include all aspects of safety and environmental effects, as well as antitrust implications. Also evaluated as part of these reviews are technical reports submitted by industry organizations, primarily vendors, on subjects related to classes of nuclear reactors and their associated systems or operation.

The required reviews will be conducted on a schedule that will not unnecessarily impact reactor startup and operation. It is anticipated that in FY 1986 there will be applications for 30[1/] plants under active review, and 20[1/] plants in FY 1987. Decisions were rendered on operating licenses for 10 power reactors in FY 1985, with 10 expected in FY 1986, and eight in FY 1987.

Resources are also required to conduct reviews for new and renewal license applications for nonpower reactors and Navy and Department of Energy projects.

The resources for this program decline as the number of existing licensing applications under review declines.

1/ Excludes Midland 1 and Midland 2 plants, which are presently not under active licensing review.

SAFETY TECHNOLOGY PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 10,178	$ 7,936	$ 5,290
(Staff)	(124)	(112)	(101)

The Safety Technology Program addresses significant technical issues that relate to the safety of reactor design, construction, and operation and maintenance, and regulatory issues that relate to the licensing process. In FY 1987, this program includes the technical resolution of unresolved safety issues, existing high and medium priority and new high priority generic issues, the development of a technical basis for regulatory positions on issues identified in the Human Factors Program Plan, and the development or modification of regulations in areas such as severe accidents.

UNRESOLVED SAFETY ISSUES

An Unresolved Safety Issue is a matter that affects a number of nuclear power plants and poses important questions concerning the adequacy of existing safety requirements for which a final resolution has not yet been developed. The issues involve conditions not likely to be acceptable over the lifetime of the plants they affect. Completion is expected on six existing Unresolved Safety Issues (USIs) in FY 1986 and three in FY 1987.

GENERIC ISSUES

Priorities will be established for resolution of potential generic safety issues based on their safety contribution and cost. Technical positions will be developed on existing high and medium priority and new high priority generic safety issues that relate to the safety of nuclear power plant design, construction, or operation. Technical resolutions of 17 high and/or medium generic safety issues were completed in FY 1985, and 16 are planned for completion in FY 1986 and 11 in FY 1987.

HUMAN FACTORS ISSUES

The technical basis will be developed for regulatory positions, guidance, and regulations on human factors issues related to the design, operation, and maintenance of nuclear power reactors. These issues include training, staffing and qualifications, licensing examinations, and maintenance, as identified in the Human Factors Program Plan (NUREG-0985). Ongoing cooperative efforts with industry groups, such as the Institute for Nuclear Power Operations (INPO) and the Nuclear Utilities Management and Human Resource Committee (NUMARC), will be continued.

REGULATORY IMPROVEMENTS

The results of the Severe Accident Research Program and source term research will be incorporated into NRC regulatory practices for operating reactors and reactors under license review over a three-year period beginning in FY 1986. Priorities will be established for multi-plant licensing actions, and the Standard Review Plan for reactor license applications will be updated as necessary. Implementation of the safety goal is planned in FY 1986 and continue through FY 1987.

Technical specifications regulations and standards will be reviewed and modified consistent with the findings of the Technical Specifications Group in FY 1986. Appropriate changes will be implemented on a plant specific basis beginning in FY 1987.

Analytical tools, such as computer codes, for the performance of audit calculations will be evaluated, modified, verified and maintained.

Technical positions and guidance will be developed for conducting probabilistic risk assessments (PRA) including maintaining the capability for assessing risk from external events.

ADVANCED REACTOR CONCEPTS

Resources are provided for interaction and coordination with industry and DOE on developing potential advanced reactor concepts.

SUMMARY

In FY 1987, resources for the Safety Technology Program decrease to reflect discontinuance of work on newly identified medium priority generic safety issues, the reduction of the Advanced Reactor Concepts efforts, discontinuance of the Halden effort (Norwegian advanced reactor project) and decreases to risk assessment methodology improvements and the Human Factors effort.

TMI-2 CLEANUP PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 252	$ 150	$ 0
(Staff)	(14)	(7)	(7)

This activity provides for the on-site inspection and oversight of the TMI-2 cleanup operations, including technical inspections and government relations onsite and in the Middletown, Pennsylvania office. This work will continue to ensure the protection of the public health and safety and the environment during decontamination and disposal of radioactive waste from TMI-2.

MANAGEMENT DIRECTION AND SUPPORT PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 0	$ 0	$ 0
(Staff)	(40)	(41)	(41)

The resources requested for Management Direction and Support provide for the overall policy guidance and management direction of the Nuclear Reactor Regulation programs by the Office Director and the Regional Administrators. Requested resources also provide for independent assessments of selected technical programs, proposals and other management issues, which include scheduling and direction of consideration of technical issues, the annual budget submission, proposed mid-year financial reprogramming, executive program analysis reports, staffing plans, congressional budget testimony, responses to congressional inquiries and required support services in the areas of procurement, administration, and personnel.

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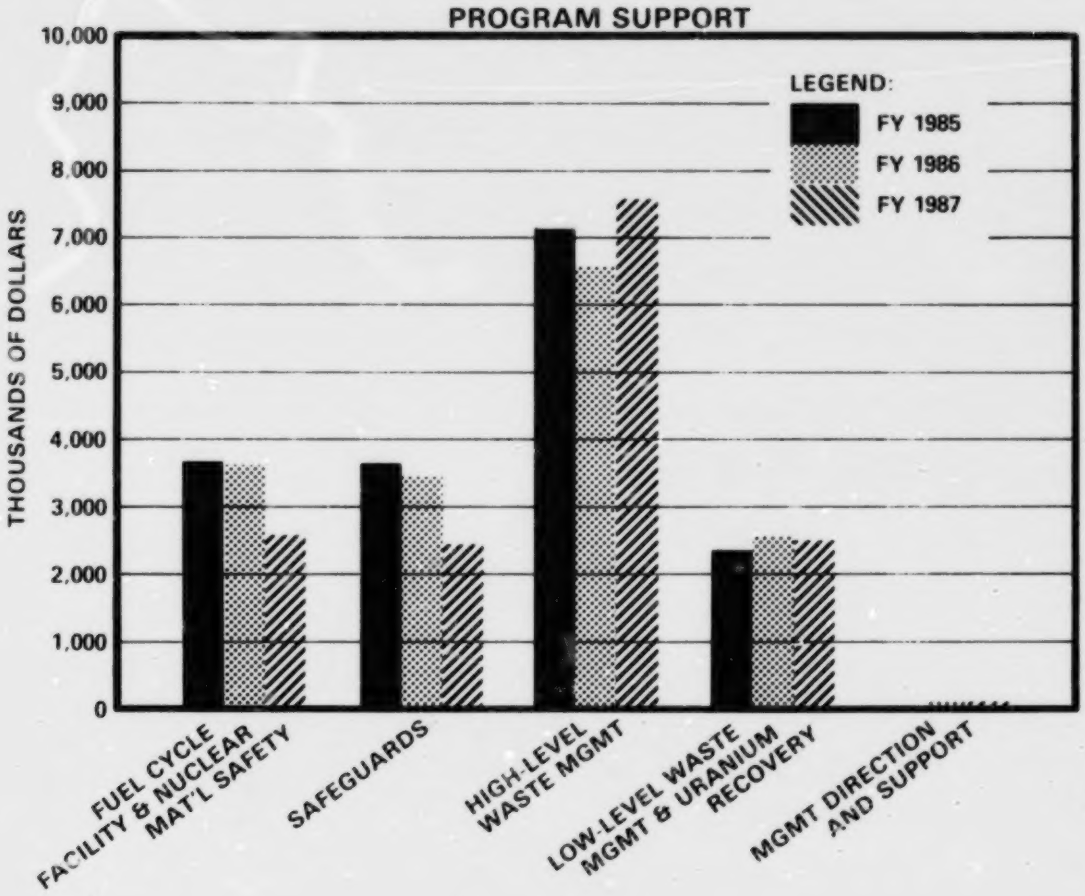
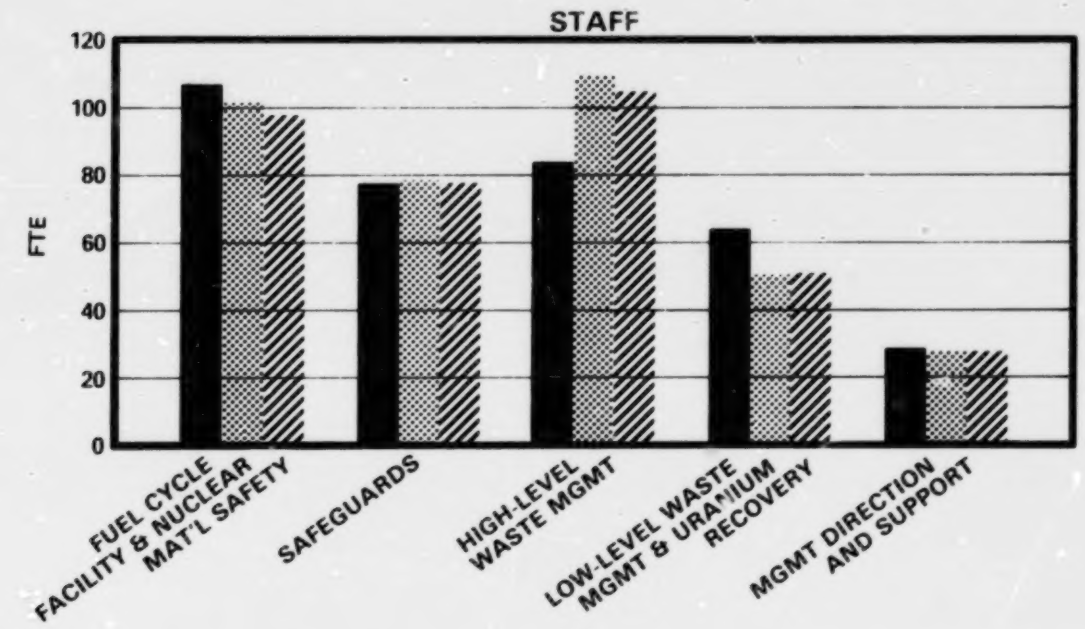
NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

22 A.

NUCLEAR MATERIAL SAFETY AND SAFEGUARDS





NUCLEAR MATERIAL SAFETY AND SAFEGUARDS PROGRAMS

(Dollars are in thousands, except in text, where whole dollars are used; staff numbers are in full-time equivalents.)

Total FY 1987 estimated obligations................................$39,520

Total Funds and Staff

	FY 1985 Actual	FY 1986[1/] Estimate	FY 1987 Estimate
Salaries and Benefits	$17,131	$17,700	$17,370
Program Support	16,738	16,305	15,200
Administrative Support	5,429	6,220	6,220
Travel	728	745	730
Total Obligations	$40,026	$40,970	$39,520
(Staff)	(362)	(370)	(360)

Program Support Funds and Staff

The Nuclear Material Safety and Safeguards staff and program support funds are allocated to the major programs shown below. The program support funds are primarily for contractual work by the Department of Energy laboratories and commercial contractors. The narrative that follows describes these programs and the reasons they are needed.

	FY 1985 Actual		FY 1986[1/] Estimate		FY 1987 Estimate	
	Funds	Staff	Funds	Staff	Funds	Staff
Fuel Cycle Facility and Nuclear Material Safety	$ 3,662	107	$ 3,612	102	$ 2,600	98
Safeguards	3,629	78	3,489	79	2,425	78
High-Level Waste Management	7,111	84	6,545	110	7,575	105
Low-Level Waste Management and Uranium Recovery	2,336	64	2,559	51	2,500	51
Management Direction and Support	0	29	100	28	100	28
TOTALS	$16,738	362	$16,305	370	$15,200	360

[1/] Estimates do not reflect the 4.3% reduction required by the Balanced Budget and Emergency Deficit Control Act of 1985. The total NRC reduction is $17,974,000.

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DESCRIPTION OF PROGRAMS

The Office of Nuclear Material Safety and Safeguards is responible for the health and safety licensing and environmental protection reviews for all activities regulated by the agency, except reactors, and for safeguards technical review of all licensing applications including reactors and the export of special nuclear material. These responsibilities include development and implementation of agency policy for the regulation of activities involving the use and handling of nuclear and other radioactive materials such as uranium milling; fuel fabrication and fuel development; medical, industrial, academic and commercial uses of radioactive isotopes; certification of containers for transport of large quantities of radioactive material; out-of-reactor spent fuel storage; and safe disposal of low-level and high-level radioactive waste. Safeguards responsibilities include those licensing and review activities appropriate to deter and protect against threats of radiological sabotage and threats of theft or diversion of special nuclear material both at fixed facilities and during transport. These responsibilities are administered under four programs: (1) Fuel Cycle Facility and Nuclear Material Safety, (2) Safeguards, (3) High-Level Waste Management, and (4) Low-Level Waste Management and Uranium Recovery.

The safety and environmental regulatory programs are designed to assure that workers, the public health and safety, and the environment are protected during both normal and off-normal operations. These programs regulate activities ranging from complex operations--such as disposal of high-level radioactive waste in deep geologic repositories, reactor fuel development and fabrication, and medical radiopharmaceutical production--to relatively simple operations--such as medical diagnostic use of small quantities of radioisotopes. Implementation of these programs provides appropriate assurances for adequate and safe facilities; trained and competent personnel; appropriate practices to control personnel exposures and environmental releases; contingency planning; transport casks to withstand conditions of normal transport and of accidents; and appropriate handling of radioactive wastes.

The safeguards regulatory program is designed to deter, detect, and protect against threats both within and outside of facilities, and during transport. In addition to providing for appropriate theft protection, the safeguards program includes appropriate planning to protect against and to respond to intentional plant damage by radiological sabotage sufficient to cause significant off-site releases. All safeguards activities are designed to assure that safeguards protective measures do not interfere with the safe operation of a facility both during normal and off-normal situations.

The Nuclear Material Safety and Safeguards Programs have been strongly affected by the Uranium Mill Tailings Radiation Control Act of 1978, the Low-Level Radioactive Waste Policy Act of 1980, as amended in 1985, and the Nuclear Waste Policy Act of 1982. The Uranium Mill Tailings Act directed the agency to develop regulations and to license the disposal of mill tailings from licensed uranium mills. Congressional action has directed that the agency regulations be amended in recognition of the Environmental Protection Agency standards both for radiation and groundwater protection. In addition to revised regulations for licensees and approval of licensee mill tailings disposal plans, the Uranium Mill Tailings Act directed the agency to review and approve the site-by-site implementation of the Department of Energy program for mill tailings remedial actions, and to eventually license possession of these sites by the Department of Energy.

The Low-Level Radioactive Waste Policy Act of 1980 placed the responsibility on the states to provide for disposal capacity for low-level waste generated within a state. The agency must ensure that appropriate regulations exist for both agency and state licensing of disposal sites and must be prepared to provide technical assistance to states in reaching decisions on disposal facilities. On January 15, 1986, the President signed into law the Low-Level Radioactive Waste Policy Amendments Act of 1985, which significantly increases NRC responsibilities in a number of areas. Resources have not been included in this budget request for implementing this new legislation. The NRC is currently assessing the extent to which additional resources are required to implement the Act.

The Nuclear Waste Policy Act lays out a detailed approach for high-level waste disposal--an extensive, long-range undertaking with the Department of Energy having operational responsibility and the Commission having regulatory responsibility. This undertaking involves a complex, integrated system of waste handling, transportation, interim and retrievable storage, and ultimate deep geologic disposal of high-level radioactive waste requiring a high certainty of acceptable environmental and health impacts over thousands of years.

FUEL CYCLE FACILITY AND NUCLEAR MATERIAL SAFETY PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 3,662	$ 3,612	$ 2,600
(Staff)	(107)	(102)	(98)

The Fuel Cycle Facility and Nuclear Material Safety Program includes all licensed activities for the "front-end" of the fuel cycle after the uranium ore has been mined and milled. This includes the processing of ore concentrates (yellow cake) into a suitable form for fuel, the development and fabrication of the fuel, and the safe transport and storage of fresh fuel at reactor sites until the reactor core is initially loaded with fuel. This program also includes regulating approximately nine thousand medical, academic, industrial, and commercial users of nuclear and other radioactive material for diagnostic and therapeutic treatments; medical and biological research; academic training and research; industrial gauging and nondestructive testing; production of radiopharmaceuticals; and fabrication of commercial products such as smoke detectors.

The Fuel Cycle Facility and Nuclear Material Safety program also involves, for operations under NMSS purview, the safe handling of radioactive wastes by industrial licensees and the safe interim storage of both low-level and high-level wastes at facilities prior to disposal at commercial facilities or by the Department of Energy. This includes storage of spent fuel outside of reactor facilities or at any monitored retrievable storage facility that the Department of Energy may develop. Also included are the safety overview of the Department of Energy waste demonstration activities at the closed-down West Valley, New York reprocessing facility, the safety assessment of containers used to transport large quantities of radioactive material such as spent fuel and high-level waste, and the packaging and transport activities associated with the radioactive wastes from the Three Mile Island Unit 2 reactor, particularly the core debris. Transportation activities are closely coordinated with the Department of Transportation and, as appropriate, with the Department of Energy and the Federal Emergency Management Agency.

The Resource Decrease in FY 1987 represents reduced efforts in licensing casework, remedial actions at contaminated sites, response to unanticipated events, computer codes for transport cask design review, and pre-licensing guidance to DOE for the monitored retrievable storage program.

FUEL CYCLE FACILITY AND NUCLEAR MATERIALS LICENSING

Licensing casework includes safety and environmental reviews required for the licensing and regulation of byproduct, source and special nuclear material in applications other than operation of power, test, or research reactors. NMSS regulated activities specifically include but are not limited to uranium fuel fabrication facilities, advanced fuel R&D facilities, and uranium hexafluoride production facilities, as well as medical, academic, industrial, and commercial uses of radioactive material. Approximately 6,000 cases (new licenses, license amendments, renewals, and sealed source reviews) will be completed each year in FY 1986 and in FY 1987.

GENERAL LICENSES

General licenses granted under Nuclear Regulatory Commission regulations are effective without the filing of an application with the agency or the issuance of licensing documents to particular persons. Such general licenses currently apply to such radioactive devices as gauges, light sources, gas chromatographs, x-ray fluorescense units, and static eliminators. During FY 1985, a study found that gauge users were not complying in all cases with transfer and disposal requirements. During FY 1986 and 1987, the agency will expand the FY 1985 study to address other general licenses and to assess accountability and protection of health and safety under the general license regulations, determine whether modifications of the regulations are needed, and make determinations about limiting or expanding the general license concept.

LICENSING OF MONITORED RETRIEVABLE STORAGE FACILITY

Monitored retrievable storage (MRS) involves the receipt, handling, packaging and storage of spent fuel and high-level waste in a facility that permits continuous monitoring and ready retrieval for subsequent shipment to a permanent repository. In compliance with the Nuclear Waste Policy Act of 1982, the Department of Energy's MRS facility construction proposal to Congress will be reviewed by the Nuclear Regulatory Commission and comments will be provided to the Department in FY 1986. Under the Act, the Commission is responsible for licensing an MRS if Congress authorizes DOE to construct one. Regulations for the storage of spent fuel in an independent spent fuel storage installation (Part 72 of Title 10 of the Code of Federal Regulations) will be amended in FY 1986 to provide for licensing an MRS facility assuming Congressional authorization. In FY 1987 the Commission will review topical reports on specific design features, as requested by DOE, and will continue to provide other pre-licensing guidance to DOE.

SHIPMENTS OF SPENT FUEL AND HIGH-LEVEL RADIOACTIVE WASTE

The Nuclear Regulatory Commission reviews and certifies the designs of containers for transporting large quantities of radioactive material to ensure that such containers can withstand conditions of normal transport and accidents. Such licensing cases involve applications for new container designs and for modifications to existing designs. Applications are submitted by commercial vendors and, on a selected basis, by the Department of Energy. Approximately 110 licensing cases will be completed in FY 1986 and approximately 95 such cases will be completed in FY 1987. As required during fuel removal of the TMI-2 core, nuclear criticality safety analyses will be performed for the defueling operations and canister storage considerations. Also, in support of the Nuclear Waste Policy Act, the agency will provide technical guidance to the Department of Energy, the Department of Transportation, the States, and industry on safety and environmental policies and regulations for the shipment of spent fuel and high-level radioactive waste to any monitored retrievable storage facility, the high-level waste repository, and any Federal interim storage facility.

DRY STORAGE OF SPENT FUEL

Review and evaluation work will continue on applications for site-specific interim storage of spent fuel outside of reactor pools. Also, review work will continue on evaluation of "Topical Reports" for dry storage cask designs. As required by the Nuclear Waste Policy Act, development work will continue on safety criteria and standards leading to rulemaking for generic approvals for the use of dry spent fuel storage casks. This will require continued close coordination with the Department of Energy on its development and demonstrations of dry cask and site storage systems, and validation of performance predictions.

DEMONSTRATION OF HIGH-LEVEL WASTE SOLIDIFICATION

As required by the West Valley Demonstration Project Act, consultation with the Department of Energy will continue regarding the planning and safety analyses for the West Valley, New York project for the solidification of high-level radioactive waste. NRC safety evaluation reports in FY 1987 will include review of supernate removal and treatment, and the sludge mobilization system. Close consultation also is important to ensure that the resulting solidified high-level waste will be acceptable for disposal in the high-level waste repository. Coordination with the Department of Energy on rod consolidation and shipments of spent fuel from the West Valley pool will be concluded in FY 1986.

TECHNICAL ASSISTANCE TO STATES

The 28 NRC Agreement States with approved responsibility to regulate certain nuclear materials activities will continue to receive technical assistance needed for the assessment of license applications for which they have licensing responsibility. For example, in FY 1985, safety evaluations were performed by the agency for cesium sealed sources to be used in commercial product irradiators.

MANAGEMENT OF LOW LEVEL WASTE PRIOR TO ULTIMATE DISPOSAL

Under the terms of the Low-Level Radioactive Waste Policy Act, as amended on January 15, 1986, the States have responsibility for providing disposal capacity for certain low-level wastes (LLW) after January 1, 1993. In the interim, access to existing LLW disposal sites is limited. Thus, work will continue on potential rule changes and preparation of licensing guides for acceptable LLW storage and treatment options. Options include combinations of additional on-site storage, volume reduction, and centralized storage, many of which will require amendments to existing licenses.

SAFEGUARDS PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 3,629	$ 3,489	$ 2,425
(Staff)	(78)	(79)	(78)

The Safeguards Program is designed to deter, detect and protect against threats, radiological sabotage and theft, or diversion involving special nuclear material, both at licensed fixed facilities and during transport. Program implementation involves a large degree of professional judgment and is influenced by security or terrorist-type activities within society. Failure of safeguards has the potential for unusually high impacts on society, including theft of special nuclear material for extortion purposes or in quantities sufficient to make an explosive device, and intentional damage sufficient to cause significant off-site releases from licensed facilities. Special care must be exercised to assure that licensee implemented safeguards programs do not affect the operation of a facility (in both normal and off-normal situations) to the extent that a significant safety problem results. The resources requested in this budget are based on the assumption that there will be no change to the basic assumptions for the NRC safeguards program.

Safeguards requirements are applied to nuclear material licensees possessing enriched uranium or plutonium, to reactors, and to the transport of enriched uranium or plutonium and nuclear reactor spent fuel. The requirements involve detailed planning, procedures, and operational systems for maintaining accountability of material, as well as for deterring and responding to suspected theft or diversion of nuclear material, acts of radiological sabotage, or illegal seizure of material or facilities. Techniques used by licensees include sophisticated detection and alarm systems, barriers, material control and accounting, contingency plans for timely responses to threatening situations, and safeguards organizations staffed with trained and competent expert personnel. This program also includes agency implementation of the Safeguards Agreement between the United States and the International Atomic Energy Agency (IAEA).

The resource decrease in FY 1987 represents reduced efforts in regulations and regulatory guidance governing protection of high-level waste, spent fuel, and non-power reactors material control and accounting at fuel cycle facilities, and support to the International Atomic Energy Agency.

REVIEWS OF SAFEGUARDS AT OPERATING REACTORS

Safeguards regulatory effectiveness reviews at operating power reactors have the objective of assuring that the safeguards required by the regulations and implemented by the licensees provide adequate protection without compromising safe operations at the licensees' facilities. By the end of FY 1987, approximately 60 reviews will have been completed at the currently budgeted level of 18 reviews per year.

SAFEGUARDS OF LICENSED FACILITIES AND TRANSPORTATION

Licensee operational data will continue to be compiled and analyzed to look for early warning patterns and trends in safeguards events and data and to identify and resolve any related generic issues through rule and regulatory guidance revisions. Approximately 700 licensing cases should be completed in FY 1986, and a commensurate number in FY 1987. These licensing cases include technical reviews of safeguards plans or revisions of those plans for power reactors, nonpower reactors, fuel cycle facilities, the transport of nuclear materials, and the export of nuclear materials.

SAFEGUARDS SUPPORT OF THE NUCLEAR WASTE POLICY ACT

In support of the Nuclear Waste Policy Act of 1982, the safeguards aspects of any monitored retrievable storage facility as proposed by the Department of Energy will be reviewed and prelicensing guidance will be provided consistent with Department of Energy schedules. As required by the Nuclear Waste Policy Act, development work will continue on safeguards requirements for generic licensing of dry cask spent fuel storage.

IAEA SAFEGUARDS PROGRAM PARTICIPATION

Consistent with the objectives of Title II of the Nuclear Nonproliferation Act, participation will continue in the Interagency Action Plan Working Group to strengthen IAEA safeguards and support the U.S. program to provide technical assistance to IAEA.

In support of the US/IAEA Safeguards Agreement, which places selected U.S. nuclear facilities under IAEA safeguards, documentation of facility descriptions and the formal specific arrangements for implementing IAEA safeguards at the facilities will be completed, nuclear materials transaction and inventory data will be compiled and reported to IAEA, and IAEA inspection activities at selected U.S. facilities will be assisted.

HIGH-LEVEL WASTE MANAGEMENT PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 7,111	$ 6,545	$ 7,575
(Staff)	(84)	(110)	(105)

The NRC's high-level waste management program is directed to an effective and efficient discharge of NRC's responsibilities based on the premise that, in the absence of unresolved safety concerns, the NRC regulatory program will not delay implementation of the Executive Branch's program as reflected in the DOE Project Decision Schedule (NWPA Section 114(e)). The resources identified are based on the schedules presented in the Draft Project Decision Schedule. Some revision may be required once the effective Project Decision Schedule is completed by DOE, which is now expected in early 1986.

The Nuclear Regulatory Commission's principal responsibility in the high-level waste program is to license the high-level waste repository providing that an independent NRC determination shows that the proposed repository's expected performance meets regulatory requirements and is adequate to protect the public health and safety and the environment. To fulfill this responsibility without causing costly delay or rework in the Department of Energy program, early, ongoing interaction and prelicensing consultation is necessary between the Nuclear Regulatory Commission and the Department of Energy. Licensing decisions will be based on independent analyses of programs now being planned and implemented by the Department of Energy. The Department of Energy must demonstrate and the NRC must assure with appropriate certainty in a formal licensing proceeding that the appropriate regulatory standards for public health and safety and the environment are adequately met. In order to provide for an effective and efficient licensing process for this first-of-a-kind undertaking, the Nuclear Regulatory Commission, in a timely manner, must develop the methods for demonstrating compliance with performance objectives to permit independent determination of the adequacy of the Department of Energy program; provide guidance to assure that the Department of Energy program provides essential and acceptable data without costly delay or rework; provide onsite overview of activities; identify and resolve issues; and provide appropriate and timely review and evaluation of Department of Energy submittals.

PRELICENSING CONSULTATION

Close interaction will be maintained with the Department of Energy, the States, affected Indian Tribes, the technical community and other interested members of the public to identify and begin the resolution of licensing issues at the earliest possible date to minimize costly delays or reworks by the Department of Energy. A licensing open-item tracking system will be developed and implemented in FY 1986 - FY 1987 to help ensure that critical licensing issues are properly addressed and tracked to resolution.

As part of this effort, extensive Nuclear Regulatory Commission pre-licensing reviews of the Department of Energy's site investigations will continue. These investigations include construction of shafts, testing of geologic properties, and other technical activities. Modest additional funding has been included to facilitate agency review of the Department's FY 1987 activities associated with the second repository.

REVIEW OF SITE CHARACTERIZATION PLANS

The Department of Energy's site characterization plans (SCPs) for three potential sites for the first repository will be reviewed in the FY 1986 - FY 1987 period, and the staff will prepare a site characterization analysis (SCA) for each site. As noted above, prior to receiving the SCPs, agency staff is conducting extensive consultation with the Department of Energy to facilitate the early resolution of issues which might otherwise disrupt the Department's activities. As required by the Nuclear Waste Policy Act, updates of the plans will continue until a site is selected (1991). Staffing decreases in FY 1987 are due to the anticipated completion of SCP reviews that year.

REGULATORY GUIDANCE

To ensure that the Department of Energy program provides the essential, acceptable, and timely data required by the Nuclear Regulatory Commission for licensing review and to ensure that licensing information needs are met and that licensing issues are resolved in a timely manner, the agency must provide appropriate and timely regulatory guidance to the Department. Such guidance includes the agency's regulations, regulatory guides, staff techical positions, and documented technical meetings. Underlying such guidance is a complex set of system performance assessment models and computer codes which must be maintained and updated as the repository development program progresses. Additional funding has been included in FY 1987 to facilitate the preparation of necessary guidance and the resolution of licensing issues in a timely manner.

LOW-LEVEL WASTE MANAGEMENT AND URANIUM RECOVERY PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate *
Funds	$ 2,336	$ 2,559	$ 2,500
(Staff)	(64)	(51)	(51)

The Low-Level Waste Management Program includes development of regulatory guidance for implementing 10 CFR Part 61 regulatory requirements at existing and new near-surface land disposal sites, and for alternatives to conventional shallow land disposal practices; providing assistance to States in their development of new waste disposal facilities; reviewing and processing licensing actions as necessary to ensure continued safe operation of currently operating commercial disposal facilities; and other efforts to assist States and compacts in their implementation of the Low-Level Radioactive Waste Policy Act, as amended.

The Uranium Recovery Program involves the licensing of those facilities under agency jurisdiction that are engaged in uranium extraction activities (other than conventional mining) and ore milling activities; the modification and development of rules that are consistent with the Environmental Protection Agency rules for regulating mill tailings; and approval, on a site-by-site basis, of each licensee's plan for disposal of mill tailings to meet requirements for public and environmental protection. In addition, the Nuclear Regulatory Commission must review, for concurrence and licensing, the actions taken by the Department of Energy in their Uranium Mill Tailings Remedial Action Program.

DISPOSAL OF LOW-LEVEL RADIOACTIVE WASTE

On January 15, 1986, the President signed into law the Low-Level Radioactive Waste Policy Amendments Act of 1985. Under this law, the NRC is given additional responsibilities in the following areas: defining low-level wastes; licensing the federal disposal of commercial LLW greater than Class C; granting emergency access to regional disposal facilities; providing regulatory

*NOTE: Resources have not been included in this budget request for implementing the Low-Level Radioactive Waste Policy Amendments Act of 1985. The NRC is currently assessing the extent to which additional resources are required to implement the Act.

guidance on alternative disposal methods; reducing the license review time; and establishing regulatory standards for wastes below regulatory concern.

Regulatory guidance is being developed for existing Part 61 requirements; alternatives to conventional shallow land disposal practices; and wastes containing radionuclides in concentrations above levels generally acceptable for near surface disposal. Work is underway to study non-radioactive but hazardous constituents of low-level radioactive wastes, and applicability of regulations promulgated by the Environmental Protection Agency (EPA) pursuant to the Resource Conservation and Recovery Act to the management of low-level radioactive wastes.

An amendment to Part 61 (Licensing Requirements for Land Disposal of Radioactive Waste) is being developed to establish financial arrangements for long-term care of disposal sites. Also, criteria are being developed for evaluating requests for transfer of sites to the jurisdiction of the Federal Government, as provided for under the Nuclear Waste Policy Act. A proposed rule is to be published in FY 1986 and development of a final rule will continue in FY 1987 for the long-term care of disposal sites.

To ensure prompt and efficient implementation of 10 CFR 61 regulatory requirements applicable to low-level wastes currently being shipped to commercial low-level waste disposal sites, reviews of topical reports on waste solidification processes, waste classification systems, and improved disposal containers will continue.

LICENSING URANIUM RECOVERY FACILITIES

Approximately 70 licensing cases per year in both FY 1986 and FY 1987 will be completed for uranium recovery facilities. These licensing cases include safety and environmental reviews of applications for new licenses, as well as applications for amendments to or renewal of existing licenses for uranium mills, heap leaching facilities, ore-buying stations, commercial solution mining, and uranium extraction research and development projects.

To ensure protection of the public health and safety it is necessary to review approximately 90 licensee monitoring and agency inspection reports per year and to assess the need for improvements in regulatory guidance and licensee performance.

Congress has mandated that the agency revise Part 40 of the regulations (Domestic Licensing of Source Material) to conform to final Environmental Protection Agency standards (40 CFR 192).

This rulemaking will focus on groundwater protection from radiological and chemical hazards at mill tailing sites. It is anticipated that a proposed rule will be published in FY 1986 and a final rule in FY 1987.

URANIUM MILL TAILINGS REMEDIAL ACTION PROGRAM

As required by the Uranium Mill Tailings Radiation Control Act, reviews will be conducted of the remedial actions that will be taken by the Department of Energy at 24 mill tailings sites and several thousand contaminated properties located near the sites. Before the remedial actions can begin, the Nuclear Regulatory Commission must review and concur with the Department of Energy plans for the long-term stabilization of mill tailings for inactive mills which generated mill tailings due to Atomic Energy Commission and/or Department of Energy activities. The program of remedial action for these mill tailings sites involves approval of plans to assure adequate long-term control of radiation or radioactive releases from the sites, protection of groundwater, and eventual licensing of the long-term custody and maintenance of the sites. The Act's provision for early Nuclear Regulatory Commission review and approval of Department of Energy plans helps ensure that the custody and care of the site can be licensed by the Nuclear Regulatory Commission, thereby precluding costly delay or rework by the Department of Energy. The greatest Nuclear Regulatory Commission involvement is expected to occur during the 1985-1988 period.

TECHNICAL ASSISTANCE TO STATES

Technical assistance on low-level waste disposal and licensing of uranium recovery facilities will continue in FY 1986 and FY 1987. With respect to low-level waste, every effort will be made to provide technical assistance to the States for existing low-level waste sites and regulatory guidance on alternative disposal technologies, as requested. With regard to uranium recovery, technical assistance will be provided to Agreement States upon request on specific technical licensing matters. Two or three requests for such assistance are anticipated each year.

MANAGEMENT DIRECTION AND SUPPORT PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 0	$ 100	$ 100
(Staff)	(29)	(28)	(28)

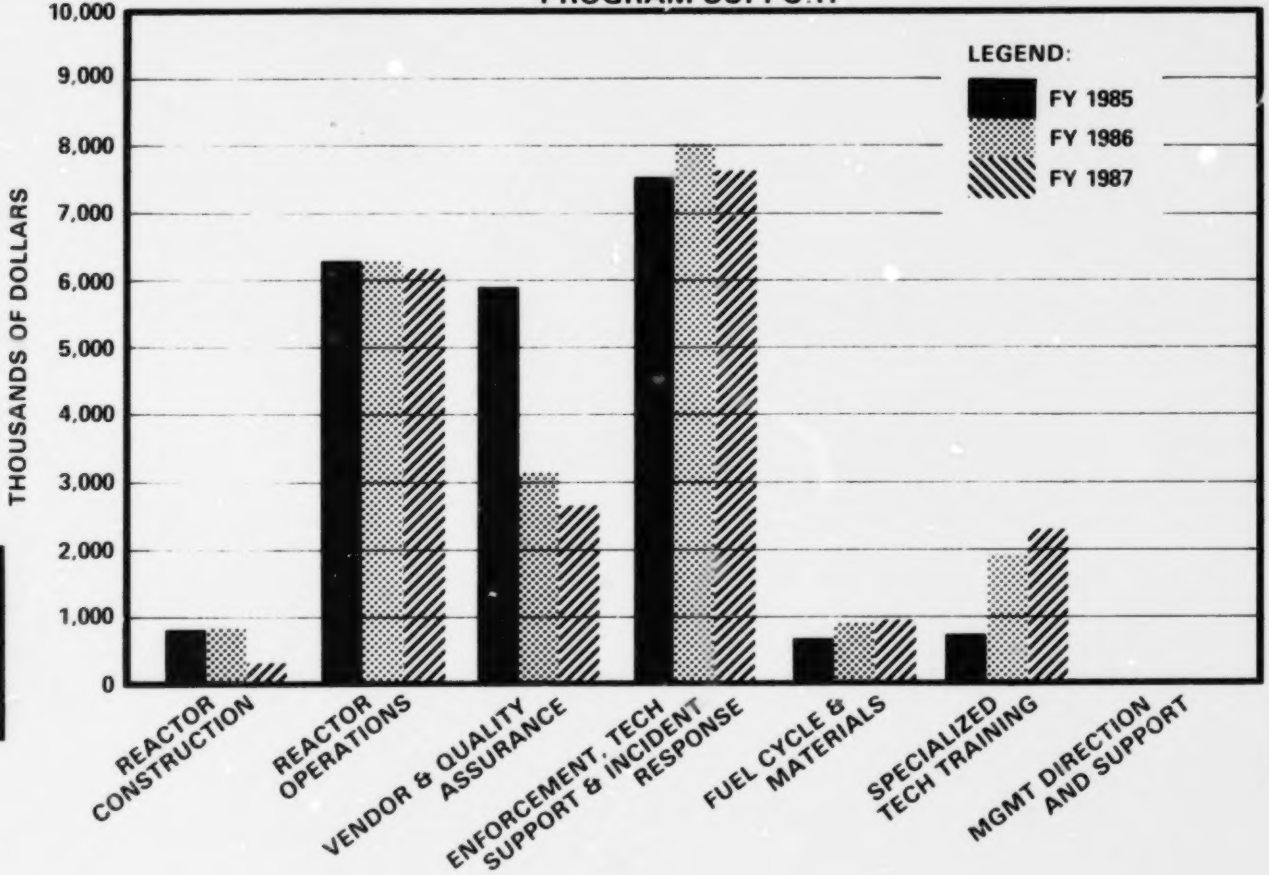
The resources requested for Management Direction and Support provide for the overall policy guidance and management direction of the Nuclear Materials Safety and Safeguards programs by the Office Director and the Regional Administrators. Requested resources also provide for technical and administrative support to the Director and the Regional Administrators.

INSPECTION AND ENFORCEMENT

38 A.

INSPECTION AND ENFORCEMENT

PROGRAM SUPPORT



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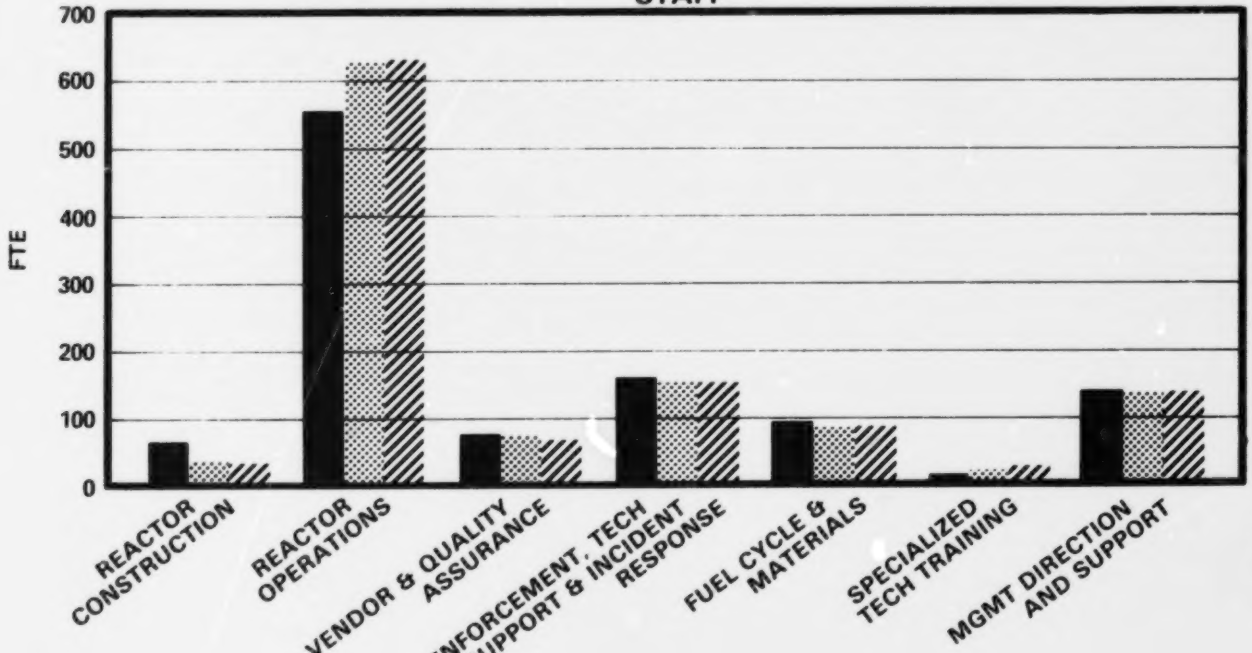


INSPECTION AND ENFORCEMENT PROGRAMS

(Dollars are in thousands, except in text, where whole dollars are used; staff numbers are in full-time equivalents.)

Total FY 1987 estimated obligations..............................$98,540

Total Funds and Staff

	FY 1985 Actual	FY 1986[1/] Estimate	FY 1987 Estimate
Salaries and Benefits	$ 53,440	$ 54,570	$ 55,750
Program Support	21,918	21,220	20,070
Travel	4,927	5,070	5,250
Administrative Support	14,301	17,380	17,470
Total Obligations	$ 94,586	$ 98,240	$ 98,540
(Staff)	(1,105)	(1,140)	(1,135)

Program Support Funds and Staff

The Inspection and Enforcement staff and program support funds are allocated to the major programs shown below. The program support funds are primarily for contractual work by the Department of Energy laboratories and commercial contractors. The narrative that follows describes the programs and the reason they are needed.

	FY 1985 Actual		FY 1986[1/] Estimate		FY 1987 Estimate	
	Funds	Staff	Funds	Staff	Funds	Staff
Reactor Construction	$ 809	63	$ 830	38	$ 300	32
Reactor Operations	6,289	555	6,290	630	6,185	637
Vendor and Quality Assurance	5,902	76	3,120	73	2,645	65
Enforcement, Technical Support and Incident Response	7,528	159	8,081	153	7,670	152
Fuel Cycle and Materials	661	95	920	87	970	87
Specialized Technical Training	729	16	1,979	20	2,300	23
Management Direction and Support	0	141	0	139	0	139
TOTAL	$21,918	1,105	$21,220	1,140	$20,070	1,135

[1/] Estimates do not reflect the 4.3% reduction required by the Balanced Budget and Emergency Deficit Control Act of 1985. The total NRC reduction is $17,974,000.

DESCRIPTION OF PROGRAMS

Inspection and Enforcement Programs are conducted to ensure that facilities and materials under agency jurisdiction are designed, constructed, and operated or used safely and in compliance with agency regulations. Prompt enforcement action is taken against licensees who do not comply.

Inspection and Enforcement Programs are conducted by the Office of Inspection and Enforcement and the agency's five Regional Offices, which are located in King of Prussia, Pennsylvania (Region I); Atlanta, Georgia (Region II); Glen Ellyn, Illinois (Region III); Arlington, Texas (Region IV); and Walnut Creek, California (Region V).

The headquarters staff has responsibility for: (1) inspection policy and program development; (2) assessment of inspection program content and implementation by Regional Offices; (3) appraisal inspections to determine licensee and regional performance; (4) enforcement actions referred by Regional Offices; (5) evaluation of licensee events; (6) response to incidents by managing the agency's Operations Center; (7) emergency preparedness, including coordination with the Federal Emergency Management Agency and emergency preparedness licensing of reactors; (8) development and licensing of quality assurance programs; (9) development and implementation of the vendor inspection program; (10) design inspection programs; (11) specialized technical training; and (12) technical support to the Regional Offices.

The majority of the program staff are located in the Regional Offices. The Regional inspection staff has responsibility for: (1) conducting inspections at reactors, fuel facilities, and materials licensees; (2) initiating enforcement actions; (3) conducting systematic assessments of licensee performance; (4) performing emergency preparedness annual reviews; (5) responding to incidents by dispatching personnel to the site in question; and (6) providing technical support to the Office of Investigations.

Implementation of the inspection program is conducted under two basic formats: (1) prescribed scheduled routine inspections designed to evaluate the licensee's activities, recognizing that the licensee has primary responsibility for protection of the public health and safety; and (2) unscheduled, reactive inspections to follow up on problems or to assess licensee compliance with special requirements imposed as a result of the evaluation of events at other reactor plants.

Response to incidents is carried out jointly by headquarters and the regions. At headquarters, the agency's Operations Center is continuously staffed to receive calls of reportable events; to determine the appropriate immediate action; and to pass appropriate items to the regions for followup. When necessary, the Center is activated and an emergency response team from the region is dispatched to the site to monitor and evaluate the situation and provide advice and information to the licensee, the Federal Emergency Management Agency, state and local government officials, other Federal agencies, and the public.

The Inspection and Enforcement Programs address the need for increased assurance that reactors being constructed will meet operating license requirements and that those in operation will operate safely.

The resident inspector program (agency inspectors with duty stations at power reactor sites) is being expanded to provide two residents at almost all single unit operating sites, in addition to the two residents assigned to every reactor construction site, including those sites with plants undergoing preoperational testing.

Table 1

Power Reactor Caseload Forecast

	End-of-Year Actual FY 1985	End-of-Year Estimate FY 1986	End-of-Year Estimate FY 1987
Reactors Under Construction[a]	12	11	10
Reactors in Preoperational Testing[b]	20	11	4
Subtotal Construction	32	22	14
Reactors Licensed or Ready for Low Power Operation[b]	95	105	113
Total	127	127	127

[a] Related resources are discussed under Reactors in Construction.

[b] Related resources are discussed under Reactors in Operation.

REACTOR CONSTRUCTION PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 809	$ 830	$ 300
(Staff)	(63)	(38)	(32)

The Reactor Construction Program consists of developing, conducting, and assessing inspection programs at reactors under construction. Resource reductions in FY 1987 are a result of decline in caseload (see Table 1) and are partially offset by increases for a restart readiness review. A readiness review is a joint initiative by the utility and NRC to evaluate in detail the utility's readiness to proceed to the next major milestone of the project in conformance with requirements for receiving an operating license. The agency's inspection program for those reactors whose construction is nearly complete (i.e., preoperational testing) is discussed in the Reactor Operations Program. The Reactor Construction Program is carried out by resident inspectors, region-based specialists, and construction appraisal team inspectors. Approximately one percent of the work activities at construction sites, which typically employ 4000 to 6000 workers, is currently actually observed by NRC inspectors.

RESIDENT INSPECTORS

The resident inspector applies general experience in construction activities to assure that installations of equipment and structures are in accordance with design requirements and quality assurance procedures. The resident inspector has frequent contact with construction management personnel from the utility. He reviews procedures, observes the work, and audits quality control. He may also participate in agency hearings, licensing meetings and public discussions. The agency is assigning two resident inspectors at each active construction site. A second construction resident inspector provides a substantial increase in onsite inspection time (approximately 50%) and should lead to more timely identification of problems associated with the complex and multidisciplined construction activities. The FY 1985 House Appropriation Committee Report (H.R. 98-755) which accompanied P.L. 98-360 indicated that more inspection effort needs to be focused on plants under construction.

REGION-BASED SPECIALISTS

The majority of inspections are in-depth, specialized technical inspections carried out by region-based specialists in the areas of civil, mechanical, and electrical engineering, instrumentation, welding, nondestructive examination and quality assurance. Region-based specialists are responsible for evaluating the corrective measures taken by the utilities to resolve certain types of identified problems.

CONSTRUCTION APPRAISAL TEAM

Construction Appraisal Team inspections are scheduled for selected reactors and serve to identify construction problems prior to licensing for operation or, conversely, to provide assurance that the plant is ready for licensing. Major independent team inspections are planned at four sites in FY 1986 and one site in FY 1987 by the Construction Appraisal Team. These inspections help determine through an integrated multidisciplined approach whether a facility is being constructed in accordance with regulatory requirements and appropriate industry practices, and whether the applicant's management and quality control programs are effective. They emphasize verification of the quality of installed components, systems and structures. They are also used to assess regional implementation of the construction inspection program, as well as to determine needed changes. Program support funds augment these efforts by providing technical assistance to the Construction Appraisal Team.

REACTOR OPERATIONS PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 6,289	$ 6,290	$ 6,185
(Staff)	(555)	(630)	(637)

The Reactor Operations Program consists of developing, conducting and assessing inspection programs for power and nonpower reactors during the preoperational testing, startup, and operational phases; developing and coordinating third-party inspection programs and agreements; reviewing emergency preparedness license applications and modifications; and providing radiological monitoring support services to Agreement States and other states. The Operating Reactor Inspection Program is performed by resident inspectors, region-based specialists and the Performance Appraisal Team.

RESIDENT INSPECTORS

Resident inspectors are generalists who concentrate on day-to-day operations, event followup, licensee management and staff performance. In addition, they coordinate on-site activities of the various agency offices and participate in emergency exercises. They also serve as the agency contact with local officials, the press and the public. The budget allows for assignment of 148 resident inspectors to operating reactors and those in preoperational testing in FY 1986 and 156 in FY 1987. A second resident inspector is being assigned at plants in the preoperational testing phase to allow for additional coverage during the critical period when utility construction and associated quality assurance and quality control inspections are being completed, preoperational testing is in progress, hearings are being conducted and when last minute allegations may be introduced. This increased on-site inspection coverage, which provides additional support for identifying, evaluating and resolving issues, will help reduce the probability of licensing delays. In FY 1987, a second resident inspector will also be assigned to almost all single unit operating sites. This additional coverage will provide better continuity and increased direct inspection of important areas such as licensee maintenance and surveillance activities.

REGION BASED SPECIALISTS

Region-based inspectors are specialists whose efforts include detailed inspections in such areas as plant operations, systems surveillance, maintenance, modifications, inservice inspection, fire protection, nondestructive testing, training, refueling, radiation protection, quality assurance, emergency planning, environmental protection, management systems, security, and safeguards. Additional region-based specialists are needed in FY 1987 due to an increased number of operating plants and for increased effort at new plants during the first two years of operation. To augment these region-based specialists, highly specialized technical assistance is provided through contractual assistance. These contracts include aerial radiological surveys, state environmental monitoring at reactor sites and other confirmatory independent measurements. Funding is also required to provide technical assistance for team inspections during planned reactor outages. Because of the potential impact to safety margins resulting from repairs and modifications conducted during outages, the NRC must implement an inspection program which focuses on major plant modifications and repairs. Many problems at operating plants have resulted from inadequate control of design, equipment installation or testing activities during outages. The numbers and types of problems have indicated the need for increased NRC inspection of modifications, repair and maintenance activities during plant outages. A pilot program is being conducted by headquarters staff during FY 1986 and the developed program will then be implemented on a national basis.

PERFORMANCE APPRAISAL TEAMS

Three Performance Appraisal Team inspections will be conducted each fiscal year to assess licensee implementation of management control systems and regional implementation of inspection programs, and to determine the effectiveness of the Institute of Nuclear Power Operations' (an industry sponsored organization) program for evaluating plant operations.

EMERGENCY PREPAREDNESS REVIEWS

Nuclear power plant applicants and licensees are required by agency regulations (Part 50 of Title 10 of the Code of Federal Regulations) to develop and implement onsite and offsite plans for taking protective actions in the event of reactor accidents. The plans for a given reactor site generally involve those prepared by the utility for application to onsite areas and those prepared by State and local governmental authorities for areas beyond the plant boundary. Emergency preparedness activities for NRC include: (1) developing licensing policy and guidance; (2) reviewing and evaluating onsite emergency plans and procedures to provide input for Safety Evaluation Reports on applicants' emergency preparedness capabilities; (3) reviewing modifications to existing licenses; and (4) coordinating with the Federal Emergency Management Agency (FEMA) on findings and determinations resulting from their review of offsite emergency preparedness of State and local governments as it affects licensed nuclear facilities. NRC will participate in a Federal Field Exercise in emergency preparedness sponsored by FEMA in FY 1987.

VENDOR AND QUALITY ASSURANCE PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 5,902	$ 3,120	$ 2,645
(Staff)	(76)	(73)	(65)

The Vendor Program focuses on architect-engineering firms, nuclear steam system suppliers and companies producing the piping, valves, pumps, electrical equipment, and instrumentation for reactors and safety-related systems. During inspections conducted at licensed facilities and the offices and plants of vendors, emphasis is placed on design verification, interfaces with plant construction, and the development, verification, and use of computer codes. The primary concern is that licensees are fulfilling their responsibilities in these areas. The Quality Assurance Program integrates agency activities for quality assurance licensing, inspection, standards and research, recognizing that substantive improvements in quality must come from the nuclear industry itself, with NRC efforts oriented to the prevention and early detection of major quality problems.

VENDOR PROGRAM

Approximately 120 inspections of vendors will be conducted each year in FY 1986 and FY 1987. The principal inspection categories are: (1) reactive inspections at vendor facilities and reactor sites in response to reports of defects and noncompliance with the regulations (submitted in accordance with Part 21 of Title 10 of the Code of Federal Regulations), adverse reports on conditions of construction (submitted in accordance with Part 50.55 (e) of Title 10 of the Code of Federal Reguations) and allegations by workers and the public; (2) equipment qualification related inspections; (3) reactive and routine inspections of the quality assurance programs of architect-engineers and nuclear steam system suppliers, technical information provided to reactor licensees on vendor-supplied equipment, and third-party surveys such as those conducted by the American Society of Mechanical Engineers in accordance with the Boiler and Pressure Vessel Code; and (4) inspections to followup on known technical issues.

Contractor assistance funds permit the agency to: conduct more detailed technical inspections at vendor facilities, concentrating on safety impact and feedback of information directly to plant operations; and provide the capability to hire experts in specialized areas. Experience over the past several years with vendors indicates that this effort is warranted. Reactor operational safety issues have resulted from the breakdown of vendor quality assurance programs, failure of vendors to adequately convey maintenance procedures to licensees, and improperly certified (and in some cases fraudulent) work and materials provided to major vendors by second- and third-level vendors. Major problems throughout the industry can be avoided if properly considered and resolved. Failure to consider these issues in a thorough and timely manner can result in additional costs to licensees, delays in licensing and the shutdown of operating plants to replace or repair defective components. Regional vendor inspection efforts are primarily related to followup and closeout actions at licensed facilities to ensure that licensee corrective action is carried out with respect to vendor problems discovered during vendor inspections.

QUALITY ASSURANCE PROGRAM

A revised program for quality assurance is being developed and carried out as recommended in "A Report to Congress on Improving Quality and the Assurance of Quality in the Design and Construction of Nuclear Power Plants," USNRC Report NUREG-1055. The Report to Congress identified a number of areas in which current agency practices should be altered to increase the likelihood of achieving quality and the assurance of quality in design and construction. While the focus of the report was on construction, many of the corrections will be applied to reactor operations. These changes include: (1) reductions in agency prescriptiveness and greater emphasis on quality program performance and end products; (2) reduction or alteration of requirements which have resulted in attempts to inspect quality into a plant rather than to place reliance on those responsible for a project or plant operations; and (3) methods to resolve quality assurance contentions earlier in the licensing process so as to avoid the necessity for considering a large number of allegations in the final stages of a project when the consequences of delay are much greater. These changes will also make the nuclear licensing and regulatory process more predictable and stable. A pilot program on readiness reviews which embodies the changes described above will continue through FY 1987.

Overall resources in the Vendor and QA area are decreasing primarily as a result of reduced requirements in the design inspection area (described below). This is partially offset by additional effort to accommodate increased emphasis on readiness reviews.

The current Integrated Design Inspections and Independent Design Verification Program reviews of selected reactors under construction will be phased out by the end of FY 1986. These programs were primarily directed at design reviews of reactors in construction. As more reactors come on line, NRC will shift the design inspection program to focus on inspections involving the review of design changes related to routine and/or major modifications to reactors in operation or during outages. Additionally, design inspections will be performed at selected design organizations that provide engineering services to operating reactors. These inspections will concentrate in the mechanical, electrical and instrumentation and control areas and will sample the technical adequacy of the engineering products. Two such design inspections are planned in FY 1987.

ENFORCEMENT, TECHNICAL SUPPORT, AND INCIDENT RESPONSE PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 7,528	$ 8,081	$ 7,670
(Staff)	(159)	(153)	(152)

The Enforcement Program is intended to assure safety through licensee compliance with agency regulations. A program for the systematic assessment of licensee performance is aimed at improving both NRC regulatory efforts and licensee performance in the construction and operation of nuclear power plants. Technical support provides necessary assistance to conduct investigations, inspect problem facilities, followup allegations, analyze licensee events for their safety significance and the appropriateness of corrective actions, communicate common problems to staff and licensees, and maintain fixed and mobile laboratories (e.g. Non-Destructive Examination van). The Incident Response Program affords assurance that the agency is prepared to respond to incidents, including twenty-four hour staffing of the agency's Operations Center.

ENFORCEMENT

The Enforcement Program is carried out to ensure compliance with regulations and license conditions; to obtain prompt correction of noncompliance; to deter further noncompliance; and to encourage improvement of licensee performance. The enforcement program employs a series of sanctions that escalate according to the seriousness of the noncompliance and the past history of licensee performance. Notices of violation, civil penalties and orders are issued, as necessary, to assure safety and compliance.

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

Systematic assessments of licensee performance are conducted for operating power reactors and reactors under construction. The program involves collecting information on a periodic basis about the overall performance of a licensee in a number of important areas (e.g., management involvement in assuring quality, enforcement history, and reporting and analysis of events). Emphasis is placed on understanding the reasons for licensee performance in these areas, sharing the understanding with the licensee, and then focusing agency inspection accordingly.

SUPPORT FOR PROBLEM FACILITIES, ALLEGATIONS AND INVESTIGATIONS

Expertise is needed to assist in inspections and investigations. Facilities where major problems have been identified have drained resources from other programs and facilities. Nuclear power plants such as Braidwood, Waterford, Comanche Peak, and Diablo Canyon have required hundreds of staff months of additional inspection and millions of dollars of technical assistance funds to resolve problems and allegations. More recently an investigation into the cause of the event at Davis Besse has exemplified the need for resources in this area. Problems at material licensees have required augmented effort. Special inspections are also required to assist in investigations responding to allegations of safety and safeguards violations at nuclear facilities.

LICENSEE EVENT ANALYSIS AND GENERIC COMMUNICATIONS

Licensee event reports are analyzed to identify problems with potential safety significance which may be common to specific types of plants. Bulletins and information notices are then prepared to inform licensees, vendors and the agency staff of these problem areas, and to recommend or require corrective actions. More than 10,000 event reports are reviewed and approximately 100 communications are issued annually.

INCIDENT RESPONSE PROGRAM

A new agency Operations Center was opened in FY 1985, improving the agency's capability to respond to incidents. In addition, systems and programs for supporting reactor safety assessment, protective measures, information management, response training, and communication of information are being upgraded. Program Support funding will provide improved communications during an emergency by using data already available in licensee computerized data systems, such as safety parameter display systems.

FUEL CYCLE AND MATERIALS PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 661	$ 920	$ 970
(Staff)	(95)	(87)	(87)

The Fuel Cycle and Materials Program provides inspections for the processing of nuclear materials at fuel cycle facilities, the use of nuclear and radioactive material at medical, academic and industrial institutions, and the transportation of such materials.

FUEL FACILITIES INSPECTIONS

Radiological safety inspections will be conducted at 60 fuel facilities each year in FY 1986-1987. These facilities include uranium mills, uranium conversion facilities, and fuel production plants. Physical security and material control and accounting inspections will be performed at the 10 fuel production plants. Inspections at fuel facilities help to ensure that unsafe conditions involving unnecessary and harmful radiation exposure to employees and the public do not develop, that materials are properly controlled to prevent a nuclear criticality accident, and that security and material control practices are adequate to prevent diversion or theft of fissionable materials.

MATERIALS INSPECTIONS

Approximately 2700 onsite radiological safety inspections of approximately 9000 materials licenses will be conducted per year in FY 1986-1987 to help ensure that unsafe conditions involving unnecessary and harmful radiation exposure to employees and the public do not develop. Nuclear materials are used by firms dealing with source, byproduct, or special nuclear materials in nuclear medicine, radiography, industrial testing, well-logging, and academic research. Inspections of transportation and the handling and storage of radioactive wastes are also required.

In addition to routine periodic inspections of licensees, the requested resources will provide for the evaluation and followup actions on 250 licensee-reported incidents, 225 medical misadministrations, and NRC action on 270 expired licenses. In the latter case the agency must determine whether the ex-licensee still possesses radioactive material, and, if so, it must act to ensure that the material is transferred to an authorized NRC or Agreement State licensee.

DECOMMISSIONING AND CLOSEOUT RADIATION SURVEYS

Decommissioning and closeout radiation surveys at materials licensees and fuel facilities will be conducted as needed to determine whether the property can be released for unrestricted use. These determinations are based on independent radiation surveys to ascertain whether the licensee has successfully decontaminated its property as it has stated in its report to the NRC.

SPECIALIZED TECHNICAL TRAINING PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 729	$ 1,979	$ 2,300
(Staff)	(16)	(20)	(23)

The Specialized Technical Training Program is managed by the Office of Inspection and Enforcement and operated at the Technical Training Center near Chattanooga, Tennessee. This program provides training to region-based and resident inspectors, other agency technical staff, and state and foreign government employees. Courses are offered in design, technology and operation of pressurized and boiling water reactors, and in other specialized areas of reactor construction, health physics, quality assurance, and operator license examiner training. Training is conducted in conventional classrooms, scientific laboratories, nuclear power plants, and reactor control room simulators. This specialized training provides added technical experience for the staff to perform inspections and safety reviews for reactors, fuel cycle facilities and materials-use activities.

Resource increases are to support specialized technical training courses which will be developed and conducted in a wide variety of specialties; for example, electrical codes, welding, health physics, etc. Reactor simulator usage will be increased for inspector and operator license examiner training. Increases in resources are based on increased demands for courses in engineering and inspection fundamentals as well as the need to keep all NRC inspectors abreast of new developments in BWR/PWR technology, radwaste, health physics and quality assurance. Another significant factor contributing to increased training resource requirements is NRC's expanded entry level hiring program, which requires extensive training of new employees in a wide variety of disciplines.

MANAGEMENT DIRECTION AND SUPPORT PROGRAM

	FY 1985 Estimate	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 0	$ 0	$ 0
(Staff)	(141)	(139)	(139)

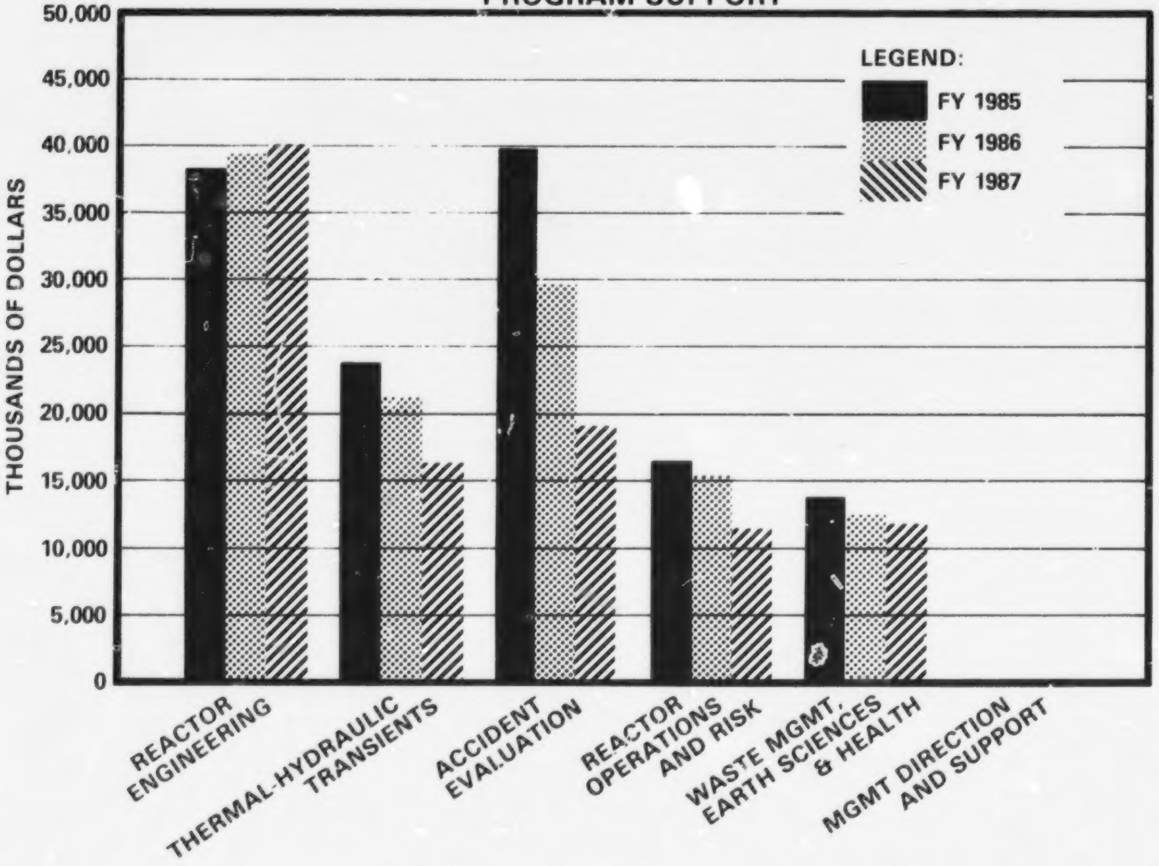
The resources requested for management direction and support provide for the overall policy guidance and management direction of the Inspection and Enforcement programs by the Office Director and the Regional Administrators. Requested resources also provide for technical and administrative support to the Director and Regional Administrators.

NUCLEAR REGULATORY RESEARCH

56 A.

NUCLEAR REGULATORY RESEARCH

PROGRAM SUPPORT



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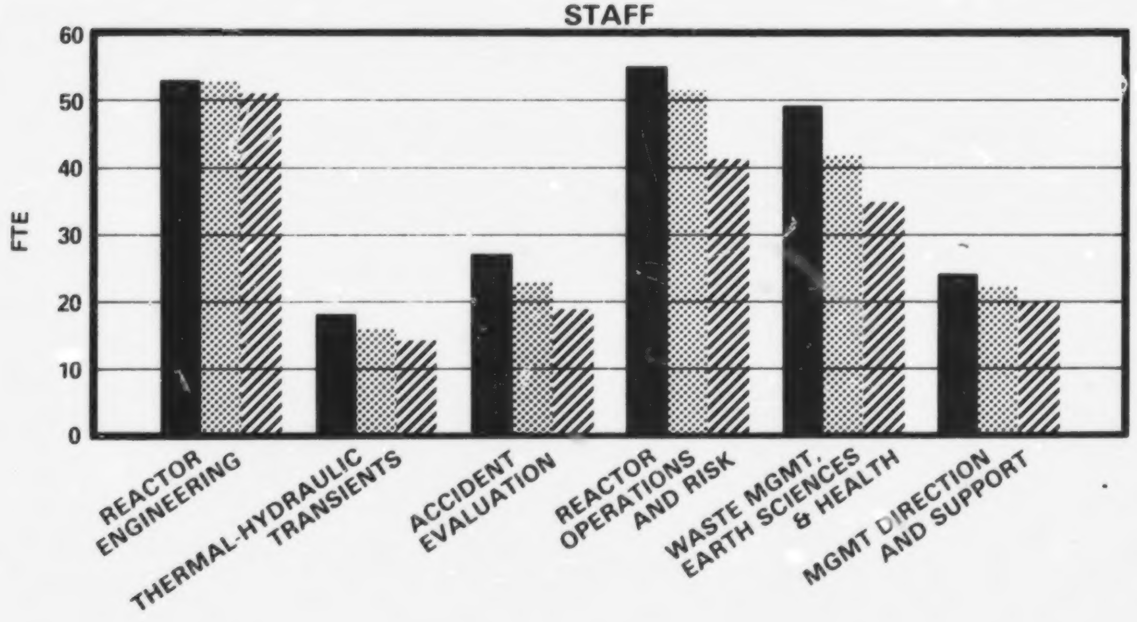

NUCLEAR REGULATORY RESEARCH PROGRAMS

(Dollars are in thousands, except in text, where whole dollars are used; staff numbers are in full-time equivalents.)

Total FY 1987 estimated obligations............................$113,460

Total Funds and Staff

	FY 1985 Actual	FY 1986[1] Estimate	FY 1987 Estimate
Salaries and Benefits	$ 12,550	$ 11,780	$ 10,210
Program Support	132,982	118,400	99,040
Administrative Support	3,847	3,960	3,690
Travel	580	570	520
Total Obligations	$149,959	$134,710	$113,460
(Staff)	(226)	(207)	(180)

Program Support Funds and Staff

The Nuclear Regulatory Research program support funds and staff are allocated for major programs, as shown below. The program support funds are primarily for contractual work by Department of Energy laboratories, private contractors, nonprofit organizations (universities, foundations, etc.), and grantees. The narrative that follows describes the programs and the reasons they are needed.

	FY 1985 Actual		FY 1986[1] Estimate		FY 1987 Estimate	
	Funds	Staff	Funds	Staff	Funds	Staff
Reactor Engineering	$ 38,817	53	$ 39,408	53	$ 40,100	51
Thermal-Hydraulic Transients	23,964	18	21,457	16	16,400	14
Accident Evaluation	39,965	27	29,900	23	19,000	19
Reactor Operations & Risk	16,610	55	15,225	51	11,800	41
Waste Mgmt, Earth Sciences & Health	13,626	49	12,410	42	11,740	35
Management Direction and Support	0	24	0	22	0	20
Totals	$132,982	226	$118,400	207	$ 99,040	180

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[1] Estimates do not reflect 4.3% reduction required by the Balanced Budget and Emergency Deficit Control Act of 1985. The total NRC reduction is $17,974,000.

DESCRIPTION OF PROGRAMS

The programs of the Office of Nuclear Regulatory Research (RES) are an essential and integral part of the regulatory process. Safety research supports nuclear regulation by providing defensible technical bases for regulatory action to ensure public health and safety. The program emphasizes early identification of potential problems with operating reactors, where problems continue to arise, and the development of criteria for the safe disposal of nuclear waste. The problems and corresponding topics of research are programatically grouped into six major areas:

1. Aging and Degradation in Power Plants

A large number of reactor plants have been operated for a significant fraction of their licensed life. Corrosion, radiation embrittlement, and fatigue have raised specific questions about the continued safety and viability of many of these plants; in particular, about the integrity of the primary coolant pressure boundary. Widespread and potentially serious problems have occurred. These have included cracked piping at boiling water reactors, defective valves and relays, and inadequate means for detecting and characterizing flaws. Although many of these questions are being resolved by research and regulatory action, they are likely to continue to arise. Further, there may be other presently unrecognized degradation mechanisms occuring, therefore, research needs to be done to identify latent problems and incipient failures before they occur.

2. Complex Operational and Thermal-Hydraulic Transients

Previous research on complex operational and thermal hydraulic transients has been largely oriented toward large-break loss-of-coolant accident (LOCA) issues and has reflected an underlying assumption that thermal hydraulic transients generally could be adequately characterized by a limiting case, the large-break LOCA. The Three Mile Island accident and other operating experiences have refuted the assumptions of a limiting thermal hydraulic case. Anomalous transients and small-break LOCAs which have occurred have had serious safety implications for a broad class of reactors, but since reactors are not standardized, direct extrapolation of the safety significance of a given accident is not readily achievable. Therefore, development and maintenance of complex thermal analysis codes, as well as experimental analysis of potential accident sequences and verification of computer codes are required.

3. Consequences and Risk from Severe Accidents

Assessments of the consequences of severe accidents have to be based on a definitive demonstrable understanding of the physical processes which occur in such accidents such as the release and transport of radioactive materials, the form in which they occur, the environmental conditions that are created by the accident, and the resultant loads on the containment system. Prior to the Three Mile Island accident several generic "source terms" were used to characterize the complete range of severe accidents. The experience of TMI revealed the defects of the generic "source term". Much basic research on source term phenomenology has been completed. The research emphasis is now directed toward an assessment of the risk of typical light water reactor designs and quantification of the remaining uncertainties so that the improved understanding of the actual processes which occur during a severe accident can be applied to severe accident decisionmaking and a reevaluation of the affected regulations.

4. Plant Operations and Risk Analysis

Significant advances have been made in the development of probablisitc risk assessment (PRA) techniques in the past decade and in research on radioactive source terms that would be potentially produced by degraded core accidents. RES directed much of its FY 1985 and FY 1986 effort to the preparation of an integrated reactor risk assessment report (NUREG-1150) that will be published in draft for public comment in FY 1986 and will assemble and interpret the most recent information on accident frequencies and risk during severe reactor accidents for six reference plants. The bulk of the FY 1987 effort will be directed to making recommendations as to the proper use of this information in regulatory decisionmaking and plant-specific applications. Such applications include assessment of: the risk reduction potential of various existing and proposed regulatory requirements; the risk represented by specific reactor conditions in establishing limiting conditions for operation and in planning specific inspection activities.

5. Seismic Analysis

With the continuing improvement in understanding of geology and seismology we have found that a number of older plants have been designed for seismic hazard levels that are below current criteria. Although we believe that there are considerable seismic safety margins in present designs, there is an urgent need for improved bases and methods for properly characterizing seismic hazard for plants, especially those in the Eastern U.S., and for well-validated methods for seismic analysis that can be used to reassess the older operating plants to determine whether adequate safety margins do exist and to quantify these margins.

6. Nuclear Waste Disposal

Disposal of both low and high-level nuclear waste involves issues that are at the forefront of technology related to waste form, waste package integrity, and the behavior of leaked radionuclides in the disposal facility environment and the biosphere. Regulatory research is required to develop the methods and data bases needed to evaluate the adequacy of applicant submission to meet regulatory requirements, particularly those on radionuclide release limits.

The Regulatory Research Program will develop for the Nuclear Material Safety and Safeguards Office the analytical methods and techniques needed: to assess waste package and facility backfill integrity, to evaluate ground water hydrology, and to determine radionuclide concentrations and dose release scenarios. These analytical capabilities are essential to an independent evaluation and review of applications for waste disposal facilities.

The emergence of new technical issues and the existing wide variety of plant designs require continuing research as described in the six major areas above. NRC must therefore maintain technical expertise for future resolution of regulatory issues. In an effort to meet these needs and to maximize productivity while experiencing a decline in funding, the Office of Nuclear Regulatory Research is working towards integration of specialized scientific and engineering areas of expertise at selected principal national laboratories. Identifying well-defined areas of technical cognizance for each of several laboratories will greatly facilitate the execution and interpretation of research results, and maintain a capability in required technical areas to respond to anticipated technical operating problems having impacts on safety.

REACTOR ENGINEERING PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$38,817	$39,408	$40,100
(Staff)	(53)	(53)	(51)

Design errors, construction defects, and degradation due to aging and wear at some nuclear plants increase the probability of the initiation of accidents or the reduced capability to mitigate the effects of accidents should they occur.

Reactor Engineering Research is directed to providing the licensing staff with the basis for taking timely action regarding the safety of operating plants and determining whether to permit continued operation or require shutdown or modification of plants. Events that require such decisions are, for example, adverse experience with components in one or more operating plants, problems uncovered by inspectors, changes in safety requirements from those for which a plant was approved, results of domestic and foreign research, and operating experience. The research involves assessing the suitability of structures and components for the intended service (including abnormal and anticipated accident conditions), the effects of time, operational environment (e.g., temperature, humidity, radiation), and conditions of operation on the continued safety of those structures and components, and the means for surveillance, inspection, testing, maintenance, repair, and replacement.

AGING AND DETERIORATION OF OPERATING PLANTS

Aging and service wear of components could result in deterioration to a point at which stresses from normal operation, transients or accidents could cause a "common mode" failure resulting in an accident or in rendering inoperable redundant safety systems needed to mitigate accidents. Research is being conducted to identify effects of aging and service on structures and components that would have an impact on the safety of operating reactors and to evaluate such measures as surveillance, inspection, testing, maintenance, repair, and replacement that can be cost effective in dealing with such effects. This research will provide a basis for assessing the safety of older plants and will facilitate relicensing to extend effective plant life beyond that originally anticipated.

Research will determine the age-related deterioration of such equipment as pressure vessels, piping, cables, valves, pumps, and motors in the anticipated environment and operating service conditions. Samples and components taken from the Shippingport Nuclear Power Plant at Shippingport, Pennsylvania, during decommissioning will be examined. The embrittlement of steel from the decommissioned German KRB-A reactor vessel, which provides a good representation of material, operating temperature and irradiation conditions of U.S. reactors, will also be evaluated. The availability of the German reactor vessel material and the Shippingport materials and equipment combined provides a unique opportunity to check predicted deterioration of both materials and equipment during operation against actual deterioration. The equipment and materials selected will be based on their safety significance and their applicability to those in currently operating nuclear plants, and the results will therefore contribute to regulatory decisions regarding the continued safety of operating reactors.

In FY 1987 tests will be performed on naturally-aged equipment (i.e., removed from operating or decommissioned reactors) to determine how aging degradation effects performance of safety functions. A data base will be developed for independent evaluation by NRC to assess degradation processes to support extended operation including that beyond the current 40-year license Safety systems will be monitored and the results evaluated to determine the impacts of aging degradation on accident initiation, safety support failure, and core melt probability.

EFFECTS OF EARTHQUAKES ON OPERATING PLANTS

Probabilistic risk studies of some U.S. nuclear power plants currently estimate that earthquakes are potentially significant causes of risk to the public from some power plants. Earthquakes affect an entire plant and can potentially damage the weakest components wherever they may be located. Piping system designs for earthquakes have resulted in "stiff" piping systems that have increased the susceptibility to pipe failures under certain circumstances.

Because of recent research data on earthquakes, new procedures for estimating the capacity of nuclear power plants to withstand earthquakes larger than their original design basis are being developed. These procedures will provide the basis for sound regulatory decisions without unnecessary modifications being required. These procedures must be validated by improved data bases from experience and experiments before they can be used with confidence. Large-scale complex experimental facilities at overseas locations in Germany and Japan are being used or pursued as part of international cooperative programs to validate these procedures. NRC pays only a small part of the total cost of these overseas experimental programs. Additionally, NRC research is being conducted to determine the failure level of concrete structures and such critical components as electrical equipment and piping to supplement the existing data base that is being gathered in cooperation with the Electric Power Research Institute (EPRI). In FY 1987 development and demonstration of procedures to estimate seismic margins will be completed. Also, the gathering and evaluation of failure levels of equipment to supplement the existing data base will be completed.

REACTOR PRESSURE VESSEL SAFETY

Brittle failure of the pressure vessel, which could result in a core melt accident, must be prevented by ensuring adequate safety margins. Experimental research on the effects of temperature, stresses, irradiation and flaws on the primary system pressure boundary is necessary to confirm the current regulatory position that pressure vessels will not fail by brittle fracture during service or in the case of an accident. Results of experiments to be completed in FY 1987 on large-scale crack arrest tests will be combined with the results of pressurized thermal shock (PTS) tests to validate the existing regulations covering PTS. Other tests and analyses will also be completed in FY 1987 of irradiated specimens to validate that the ASME Code Section XI reference fracture toughness curve can confidently be used to predict the embrittlement increases in vessels for pressure-temperature limits and for PTS analysis.

ADEQUACY OF SAFETY EQUIPMENT UNDER ABNORMAL CONDITIONS

Qualification tests which show that certain equipment will operate under normal conditions may be insufficient by themselves to assure safety. Some safety equipment (e.g., valves, cables, radiation monitors) must remain in operation in the event of accidents or the occurrence of such severe natural phenomena as earthquakes, floods, tornadoes, and hurricanes if the public is to be protected from radioactive releases from the plant. The standards used by industry to qualify equipment for these operating conditions need validation to confirm regulatory positions and identify improvement where needed. Research will continue to determine the adequacy of methods for the dynamic qualification of safety equipment and the environmental qualification of mechanical safety equipment and to develop modified methods as needed. In FY 1987 experiments will be completed on containment isolation valves that will be used to predict their leak behavior under postulated design basis and severe accident conditions.

The containment building is the final barrier to the release of radioactive material to the environment after a severe accident.

It is important that we know at what pressure and temperature the containment building will have unacceptable leakage. NRC experimental research is being conducted on a scale model concrete containment building to validate calculational methods used to predict the structural and leak behavior of containments under severe accident conditions. Separate experiments are also being conducted on containment penetrations such as airlocks, hatches, and valves to evaluate their leak behavior. This research supports the NRC severe accident policy. In FY 1987 experiments on a scale model concrete containment building will be completed. The results of these experiments will establish the technical basis for predicting the structural and leak behavior of containment under severe accident conditions.

PIPE CRACKING AND THE LEAK-BEFORE-BREAK PRINCIPLE

There have been numerous instances of cracked piping in nuclear power plants. Piping in most operating nuclear plants was designed on the basis that a double-ended guillotine break is the major accident against which the plant must be protected, a conclusion that led to the installation of numerous pipe whip restraints. If the proper design basis for certain piping systems is to assume that pipes will leak before breaking, what were believed to be conservative designs may actually have reduced, rather than enhanced safety. The restraints also reduce safety by interfering with accessibility for in-service inspection, making inspections more difficult and resulting in increased radiation exposure for workers performing inspections. In addition, possible errors in installing the massive restraints could result in excessive stresses on piping systems not accounted for in their design.

Changes in NRC regulations on piping, particularly regarding the acceptability and implementation of the leak-before-break position will be either completed or well under way by FY 1987. The research in FY 1987 will address such topics as dynamic loading (seismic effects and water hammer), high-energy pipe tests, and crack opening areas. Tests will be conducted in FY 1987 of large-diameter cold-leg pipes to validate and refine pipe fracture analysis methods used in the licensing process to provide a consistently conservative assessment of the load carrying capacity and eliminate the current discrepancy between measurements and predictions. Other testing (in cooperation with EPRI) to verify the adequacy of the industry code for safe lifetime design of nuclear piping systems, to determine the margins in the code, and to recommend changes to the code, as appropriate, will be nearing completion. Research on cracking in stainless steel pipes of boiling water reactors will focus on improved leak detection and inservice inspection and on verification of the safe lifetime for crack repairs such as weld overlays. Completion of field testing of improved leak detection systems in FY 1987 will be important to the use of the leak-before-break principle in regulation. By auditing industry test methods, improvements will be made and criteria developed for qualifying nondestructive examination personnel to improve the reliability of finding flaws and at the same time help eliminate needless and costly "repairs" of uncracked pipes. The above research will contribute to confirming the technology based on the leak-before-break principle as a replacement for the double-ended guillotine break as the design basis for certain safety-related piping in nuclear power plants. The implementation of such an action would permit the removal of pipe restraints and jet impingement barriers thereby enhancing the accessibility and inspectability of piping.

STEAM GENERATOR INSPECTION AND REPAIR

Steam generator tubes can be damaged and cracked during service by corrosion and by stresses from vibration, cleaning and other effects, and a fix for one problem, e.g., tube denting, sometimes causes a different problem, e.g., tube thinning. Because these mechanisms can affect many tubes in the steam generator, multiple tube failures may result from an internal transient (e.g., pressure surge) or an external event (e.g., earthquake) with the potential of discharging primary coolant through the steam relief valves located outside containment. It is essential that damaged tubes be detected and evaluated for removal from service. Upon completion of the experimental work in FY 1986, the technical basis will be established in FY 1987 for upgrading the regulatory guide criteria for plugging tubes or allowing them to continue to operate, and for improved methods for tube inspection to ensure that unsafe tubes are not missed and allowed back in service. This research is jointly sponsored with the Electric Power Research Institute in the United States and with France, Italy, and Japan.

THERMAL-HYDRAULIC TRANSIENTS PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$23,964	$21,457	$16,400
(Staff)	(18)	(16)	(14)

The Thermal Hydraulic Transients Program provides verified computer codes to the NRC licensing staff for use in conducting safety evaluations of licensed nuclear plants for a wide range of possible transients and accidents such as small- and large-break loss-of-coolant accidents, feedwater-line and steam-line breaks, and overcooling and undercooling transients. The NRC licensing staff uses verified computer codes to independently evaluate plant designs to ensure they are capable of safely responding to plant transients. This is done to ensure that analyses performed by reactor vendors or utilities for licensing submittals are accurate and will result in operating procedures that will prevent serious accidents.

Successful operation of the emergency core cooling system (ECCS) mitigates the effects of loss-of-coolant accidents. Scenarios in which ECCS does not function as intended are investigated under the Accident Evaluation program described later in this document. Thermal-hydraulic codes are developed and verified using data from experiments conducted in integral and separate effects test facilities. The decrease in funding in this program is due to the termination of Semiscale experimental testing and deferring the Multi Loop Integral Systems Test (MIST) follow-on test program and the continued development of the nuclear plant analyzer.

INTEGRAL FACILITIES

Since the Babcock and Wilcox nuclear plant design (such as TMI) incorporates features which affect its safety performance in ways that are significantly different from other pressurized water reactors, separate experiments must be conducted. NRC is conducting a joint program with the industry to study small-break loss-of-coolant accidents, feedwater- and steam-line breaks, and overcooling and undercooling transients for Babcock & Wilcox type reactor plants. These accidents have been identified by operating experience and risk studies as requiring regulatory attention. The joint experimental program with industry will be performed in FY 1986 using the Multiloop Integral System Test (MIST) facility in Ohio. The June 9, 1985, temporary loss of feedwater event at the Davis-Besse plant, which has a Babcock & Wilcox designed reactor, raised important safety issues such as the effectiveness of B&W feed and bleed procedures to cool the plant after upset conditions. During FY 1987, data from the 1986 tests will be analyzed and interpreted to help provide regulatory answers for this and other anomalous transients in B&W-designed reactors. The NRC regulatory staff has requested a follow-on program in MIST to provide additional safety information to help resolve operational problems being experienced at Babcock & Wilcox reactors. Funding is not available for such a program but some reprogramming may be possible. Domestic experimental programs studying potential accidents in Combustion Engineering and Westinghouse type reactor plants will be completed with the completion of the Semiscale program in Idaho in FY 1986. Analysis of the Semiscale results will be completed in FY 87 and a report issued. With the termination over the past few years, including FY 1986, of the Loss of Fluid Test (LOFT), Semiscale, the General Electric boiling water reactor test facility and the B&W and Westinghouse pressurized water reactor test facilities, there will be no integral system test facilities in the United States.

The Upper Plenum Test Facility (UPTF) in Germany and the Slab Core Test Facility (SCTF) in Japan, together with the NRC-supplied instruments and computer codes, will provide data to help resolve the thermal-hydraulic regulatory issues such as: the effectiveness of upper plenum injection in Westinghouse two loop plants, resolution of full scale ECC bypass concerns, and full scale data on flood/fluid mixing in the downcomer under pressurized thermal shock conditions. Construction of UPTF was completed in 1985; the experimental program will take place in FY 1986 through FY 1988. A report on the Japanese experiments will be issued in FY 1987 typing the results to input needed for the NRC regulatory program.

The Rig of Safety Assessment IV (ROSA-IV) program in Japan is studying small-break loss-of-coolant accidents, feedwater- and steam-line breaks, and overcooling and undercooling transients at a very large scale with the ability to confirm the large quantity of safety test data from the smaller Semiscale Facility. The ROSA-IV experimental program began in FY 1985 and will continue until FY 1988. NRC's support to these programs is in the form of instrumentation, computer codes, and analyses. The resulting test data will be used by NRC to assess the capability of its own computer codes as well as those of industry to simulate the design basis transients.

SEPARATE EFFECTS

Separate effects experiments supply data in areas where a better understanding is still required to reduce uncertainties in safety phenomena and to maintain and improve thermal-hydraulic expertise for use in responding to accidents. Much of the work is currently being done at universities, including steam generator heat transfer at MIT, Babcock & Wilcox simulation at the University of Maryland, boron mixing at Purdue University, and core heat transfer at Lehigh University. Computational models will be derived from the results of these research efforts and will be incorporated into the NRC safety analysis codes in FY 1987.

TRANSIENT MODELS AND CODES

Experimental data are used to verify the computer codes and to improve the modeling of thermal-hydraulic phenomena. The principal codes developed by the NRC are TRAC-PWR and RELAP5 for use by the NRC regulatory staff in the analysis of pressurized water reactor transients, and TRAC-BWR and RAMONA for the analysis of boiling water reactor transients. Major development of the codes is generally complete. Efforts are continuing in the areas of code maintenance, code assessment and, error corrections. The Nuclear Plant Analyzer (NPA) allows NRC licensing staff to perform direct hands-on analyses of regulatory/safety incidents. The NPA approach not only uses the capability of NRC's most complex and versatile computer codes that could heretofore be performed only by Department of Energy laboratory code experts but will also allow NRC to use dedicated mini-computers employing parallel processing techniques in the near future pending successful development. NRC followup and response to the June 1985 Davis-Besse accident were considerably enhanced and speeded up through rapid analyses of potential consequences and mitigative actions performed on the prototype version of the NPA. Maintenance of NRC NPA capability developed in previous years would be continued in FY 1987. Because of funding limitiations, NRC is not able to continue development of advanced plant analyzer techniques which would allow NRC to have a self contained minicomputer driven system at headquarters. Current inefficiences reslt from the need to run from mainframe computers located at DOE national laboratories. This action also stops work on NRC's only plant analyzer capability for boiling water reactors. With the elimination of U.S. integral testing capability and the reduced resources for code assessment an international code assessment and application program was established in FY 1985 and will continue for approximately five years. The NRC has established agreements with different countries in which the codes are provided to them in exchange for nuclear plant start-up test data not available to NRC from U.S. plants and data from their national test facilities in Italy, Sweden, UK, and Switzerland which is used by their analysts for assessment and applications of the codes. The results of evaluations of these assessment calculations, and review of DOE laboratory contractor code evaluations, will form the basis for any code improvements to be performed in future code versions. This will provide for a broadly supported technical basis for any code improvements in future years. Code improvements to NRC's two major thermal hydraulic safety analysis codes, TRAC and RELAP, resulting from these assessments will be made during FY 1987 and the documentation issued.

ACCIDENT EVALUATION PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$39,965	$29,900	$19,000
(Staff)	(27)	(23)	(19)

The FY 1986 and FY 1987 Accident Evaluation Research Program is required to complete the technical basis for the closure of severe-accident issues, in particular, the radioactive source term, in accordance with the provisions of the Commission's Severe Accident Policy Statement. The ability to predict how radioactive materials are transported and released during postulated reactor accidents lies at the very heart of the regulatory process. The need for and extent of protection of the public from undue risk are measured by careful assessment of possible accidents and the releases of radioactive materials from such accidents. Closure of this issue requires the systematic reevaluation of NRC regulations based on the new source-term data. Some of the regulations that must be reevaluated include those providing requirements for containment performance, environmental equipment qualification, fission-product attenuation systems, emergency planning, and siting. Closure of this issue also requires the systematic safety evaluation of operating plants and the determination of criteria for future plants. The research consists of an integrated program of both in-reactor and laboratory experiments and the development and validation of accident-analysis models and codes. This program has attracted significant financial support from foreign program partners to share program costs.

The recent NRC program to provide current snapshot reassessment of the accident source term based on the best research information then available, has provided a technical basis for determining the values of the source term for different nuclear plants and for different accident sequences as well as a preliminary basis for determining the uncertainties in the source term. It was argued after the TMI-2 accident that the low fission-product release to containment in that accident showed that the source terms currently required by NRC's regulations were too large. The source term reassessment, done for only two plants thus far, gave a reduction in the calculated source term for some but not all plants and accident sequences, but also showed that the uncertainties remained large. An independent assessment of this work by the American Physical Society (APS) generally endorsed the technical approach, but stated that completion of the research currently planned in the FY 1986 and

FY 1987 Accident Evaluation program was important to improve the data base and reduce uncertainty for the accident-analysis codes and to reduce the current large uncertainties in severe-accident phenomenology. The decrease in funding in this program is the result of terminating Annular Core Research Reactor fission product experiments, fission product and containment aerosol experiments, separate effects testing in support of core melt codes and core melt aerosol release tests.

SEVERE-ACCIDENT ANALYSIS

In FY 1987 dominant severe accident sequences that have been identified from probabilistic risk assessments will be examined for selected operating plants. These analyses will utilize input from cooperating utilities to ensure realistic and accurate representations of the plants. This work will provide information about the effects of timing and the mode of containment failure on severe accident consequences. Societal effects will be evaluated. Computer codes and analysis techniques developed under this research give NRC a unique ability to find accident sequences that are likely to result in core damage and an ability to evaluate vendor-proposed mitigating actions for their success potential. During FY 1987, the high risk sequences which have been identified by NRC and industry risk evaluations of seismic events, internal floods or fires, and adverse operator actions will be used as the starting point for severe accident analyses to explore actual plant response to these events and the possibility of operator actions which could reduce, mitigate or stop release of radioactive products to the public.

DAMAGED FUEL

The work on damaged fuel is beginning to provide characterization of the reactor core during core-melt progression as input for determining the core hydrogen generation, fission-product release and behavior, and the core-melt threat to the containment integrity. In FY 1986, this work includes small tests in the Annular Core Research Reactor (ACRR) in New Mexico on melt progression to fuel-melt temperatures and studies of hydrogen generation in the dominant severe accident sequences. Analysis of the data from these experiments and the application of the new knowledge to regulation will continue in FY 1987. A full-length coolant boildown, severe fuel damage test under BWR conditions will be performed in the Canadian NRU test reactor in FY 1986 to provide needed data on hydrogen generation in BWR severe accidents. This data will be analyzed and reported in FY 1987. The four Power Burst Facility severe fuel damage experiments were completed in FY 1985. Post test examination, analysis, and evaluation of the data obtained from this test series will be completed in FY 1987. Validation of the melt progression (MELPROG) code and the severe core damage analysis package (SCDAP) code is required for use in severe fuel damage source term assessment and for benchmarking simplified severe accident safety analysis codes such as the new MELCOR code. MELCOR in turn will be used for future severe accident analyses and specifically to calculate source terms. This validation uses results of German and NRC laboratory work, along with results of the DOE examination of the TMI-2 core and the EPRI tests in the TREAT test reactor in Idaho.

CONTAINMENT LOADING

Research on the effects of the damaged core on containment loading will be used to provide the technical basis for closure of issues related to containment performance under severe accident conditions. Probabilistic risk assessment has shown that the public health consequences of accident sequences with early containment failure are a major factor. By contrast, a delayed containment failure is expected to greatly reduce the impact on public health. It is important that the current containment performance criteria be revised to reflect recent research results so that current regulatory practice will reflect our current knowledge of accident phenomena. Uncertainty in the timing and magnitude of key containment load phenomena that, in turn, lead to uncertainties in evaluating containment performance will be resolved as experiments are completed. In FY 1987 the experimental program on key phenomena that govern containment loading in severe accidents will be nearly completed. This work includes core/concrete interactions, fission-product release from the reactor cavity, energy transfer to the containment atmosphere, and the natural processes that result in fission-product retention in containment. Analysis of the data from these experiments and the application of the new knowledge to regulation will continue in FY 1988.

FISSION-PRODUCT BEHAVIOR

Additional fission-product research is needed to reduce uncertainties found to be unacceptable by the American Physical Society for the NRC source term reevaluation and severe accident policy. A detailed uncertainty analysis of the source term implied by selected accident sequences is being performed in FY 1986. These uncertainties involve the release and transport of actinides and lanthanides and other nonvolatile elements and fission product chemistry at high temperature and pressure. The program in FY 1986 includes completion of separate-effect experiments on fission-product and aerosol release and transport, both in the laboratory and under in-core severe accident conditions in the Annular Core Research Reactor. Analysis and reporting of these tests will be performed in FY 1987 and FY 1988. Additional testing in the Annular Core Research Reactor is needed to explore differences between fission product releases observed in prior in-pile tests, however, resource constraints will not allow these tests. Confirmatory integral (multi-effect) validation tests with full-length test fuel bundles to determine fission-product release and hydrogen generation rates will be performed in the Canadian NRU test reactor. Analysis of the data from these experiments and the application of the new knowledge to regulation will continue in FY 1988. Important complementary data will be available from Electric Power Research Institute experiments. These results will be used to verify the current source-term computer codes.

REACTOR OPERATIONS AND RISK PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$16,610	$15,225	$11,800
(Staff)	(55)	(51)	(41)

The Commission is presently faced with major decisions on the need to impose additional safety requirements on the licensed nuclear power plants in order to ensure that the risk to the public is maintained at acceptable levels. These decisions could potentially involve the large expenditures of funds by the nuclear industry. Clearly, decisions of this importance must be based on analysis of the best information available on the current levels of plant safety and on the costs and effectiveness of remedial risk-reduction measures. Consequently, quantitative assessments of the probabilities and consequences of reactor accidents have become an essential element in the Commission's decisionmaking process, as evidenced by the issuance of its policy on severe accidents and its work toward adoption of a quantitative safety goal. This work includes research in the areas of reliability and risk methodology, data and uncertainties, regulatory and inspection applications and severe accident risk. Each of these areas is discussed later in this section.

Significant advances have been made in the development of probabilistic risk assessment (PRA) techniques in the last decade. However, additional research is still needed to make estimates of reactor risk more reliable. The recently completed American Physical Society review of research on the releases of radioactivity in a severe reactor accident identified several areas in which additional research effort was needed before revised risk estimates could be confidently factored into the regulatory program. Recent events, including serious occurrences at the Salem, Davis-Besse, and Browns Ferry nuclear generating stations, provide additional support for the need to conduct systematic appraisals of the reliability of safety systems and the current level of plant risk and to bring to closure the outstanding unresolved and generic safety issues. Examples of such issues include systems interaction in nuclear power plants and shutdown of decay heat removal requirements.

For these reasons, the FY 1985 and FY 1986 risk assessment programs have been directed to the preparation of an integrated reactor risk assessment report that would assemble and interpret the most recent information on accident frequencies and risk during severe reactor accidents for six reference plants. A methodology will be adopted by NRR, drawing heavily upon proposals developed by IDCOR and insights gained from the RES risk assessment programs, to extrapolate risk insights gained through this study to the approximately 100 licensed (operating and near-term operating) reactors. In FY 1987 resources will be directed to closure of the severe accident issue and to make available important risk-based information to the licensing and inspection staffs. As a result, work will be deferred on several outstanding reactor safety issues in safeguards and transportation regulations, and for better methods to assess the risk of external events and common cause failures (e.g., fires) in operating reactors. The decrease in funding in the program is the result of terminating work on accident consequence codes and safeguards and reducing regulatory analysis activities including work on component uncertainties and the Risk Information Management System.

RELIABILITY AND RISK METHODOLOGY

One shortcoming of probabilistic risk assessment is that current methods do not have the capability to adequately evaluate the risk contribution of many important accident initiators such as external events (earthquakes, floods) or common cause and dependent failures (fires, human error). Recent probabilistic risk assessments have concluded that these factors could be major contributors to plant risk, but with large uncertainties. Improvement in the ability to analyse such contributors would significantly improve the Commission's ability to make severe accident decisions. To provide a more complete plant risk profile for Commission decisionmaking, methods for including such initiators in risk assessments are being developed and will be tested during FY 1986. This research is being conducted in a cooperative program with Commonwealth Edison Company at Commonwealth's LaSalle Unit 2 station. This program will produce improved methods for conducting more comprehensive PRAs which will be made available to NRC staff and industry in FY 1987. These methods will provide NRC with an enhanced capability to fully evaluate licensee responses to the Severe Accident Policy, to resolve outstanding safety issues, and to revise the reactor design criteria. Following publication of these methods, work in the area of methods development is expected to be at a much reduced level, focusing on any remaining deficiencies in methods and on the resolution of specific unresolved and generic safety issues.

DATA AND UNCERTAINTIES

In addition to research to improve risk methods, there is a corresponding need to collect and analyze data on the performance and failure rate of plant systems and components. This activity can help to ensure that the results of reactor risk assessments are as accurate and reliable as possible and can identify incipient safety problems in operating plants thereby avoiding events that might pose a risk to public health such as those that occurred recently at the Davis-Besse and Salem stations.

Data acquisition and retrieval methods developed by the research program have reached the point at which they can be transferred to NRC's Office for Analysis and Evaluation of Operational Data. Additional research in this area in FY 1987 will be directed toward identifying the root causes of plant system and component failures. Examples of such root causes are improper maintenance or installation and human error. The data obtained in these programs will immediately be used by NRC's inspection and licensing staff to evaluate technical specifications for equipment performance, allowed outage times, and surveillance and maintenance intervals. By the end of FY 1987, RES will have completed the development of models and techniques that will provide an analytic basis for revising plant technical specifications.

REGULATORY AND INSPECTION APPLICATIONS

The application of PRA techniques to major safety issues facing the Commission has, in many cases, provided a powerful tool for ensuring that Commission actions are cost effective in reducing the risk to the public.

Specific PRA results have recently been used to support closure of several unresolved safety issues such as Anticipated Transients Without Scram (ATWS), Station Blackout, Decay Heat Removal, and Pressurized Thermal Shock. During FY 1987 and beyond, research will continue to support the resolution of outstanding safety issues such as Generic Issue B-61 (Allowable ECCS Equipment Outage Times) and any additional safety issues as they are identified.

Based on research conducted in FY 1985 and FY 1986, using the probabilistic risk assessment of the Arkansas-1 nuclear power station development of an integrated, computer-based risk information management system for use by regional and headquarters staff will continue in FY 1987. This system will provide IE and NRR Headquarters and regional staff with risk-based information to assist them in conducting their inspection and licensing activities more effectively. It will also provide inspectors with real-time data on plant status and the impact of equipment outages on risk and thus will provide a more effective method for evaluating limiting conditions of operation. In addition, the system can be used by the NRC staff to identify and assess procedural changes and modest equipment modifications that may be effective in reducing risk. In FY 1987, the merits of an integrated system to extend the modeling data base to the 100 operating and near-term plants will be assessed.

It has also become clear that, as plants age, comprehensive reliability assurance programs must be developed and implemented by licensees in order to maintain plant safety at acceptable levels and thereby prevent plants from becoming risk outliers. In FY 1986, RES will complete its current research involving trial applications at several nuclear power plants. Based on the results obtained, RES will make recommendations for implementing, in FY 1987, a full scale demonstration at one plant and will continue to develop an independent NRC capability to assess licensees' reliability assurance programs. This capability will be increasingly used in the future to identify incipient safety problems, maintain plant safety, and evaluate the safety impacts of proposed temporary or permanent changes in regulatory requirements for operating nuclear power plants.

SEVERE ACCIDENT RISK

RES has directed its FY 1985 and FY 1986 severe accident risk assessment programs to the preparation of an integrated reactor risk assessment report, NUREG-1150, that would assemble and interpret the most recent information on accident frequencies and fission product behavior during severe reactor accidents. This report, scheduled for completion in FY 1986, will provide, for public comment, a risk perspective on six reference reactor plants representing the major containment types. These plants were selected as being typical of the approximately 100 licensed and near-term reactors. When completed, these risk perspectives will be used as a basis for developing methodology to apply risk-based techniques to plants without PRAs as part of NRR's implementation of severe accident policy and to assess the risk importance of existing and proposed regulatory requirements. For example, it will be used to reassess the NRC's emergency planning and siting regulations. The plant modeling and data developed will also be used in FY 1987 and beyond to develop user-friendly, interactive computer models that will facilitate the use of this information in analysis of generic and plant-specific regulatory requirements and evaluation of operating events.

MANAGEMENT OF RULEMAKING

The management of agency rulemaking requires all ongoing agency rulemaking to be independently reviewed by the Office of Nuclear Regulatory Research to ensure that:

1. NRC rulemaking resources are focused on issues important to public safety and common defense and security,

2. All ongoing rulemakings are coordinated and consistent with agency policy,

3. Necessary rulemakings are properly developed and documented and are completed in a timely manner, and

4. Unnecessary rulemakings are weeded out before substantial staff time and resources are spent on them.

Initial efforts have been focused on purging ongoing rulemakings of marginal safety significance from the NRC Regulatory Agenda. Over 80 rulemakings have been independently reviewed to date; and, as a result, 16 rulemakings have been terminated.

In addition during FY 1987 RES will continuing its program to reevaluate the effectiveness of existing regulatory requirements utilizing probabilistic risk assessment techniques as one tool in the evaluation. The objective of this continuing program is to identify those requirements that are clearly not effective in enhancing public health and safety and should therefore be revised or withdrawn. Such a program would permit limited agency resources to be focused more on matters of highest safety significance. In FY 1985, this program provided a general screening of 10 CFR Part 50 (Domestic licensing of production and utilization facilities) which identified candidate regulatory requirements which appeared to have marginal importance to risk. In FY 1986 and FY 1987 more detailed analyses will be performed on approximately ten regulatory requirements which may support possible future regulatory actions.

WASTE MANAGEMENT, EARTH SCIENCES AND HEALTH PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$13,626	$12,410	$11,740
(Staff)	(49)	(42)	(35)

This decision unit includes the NRC research and standards development work done in the areas of high-level and low-level radioactive waste management, the earth sciences, radiation protection, and radiation health effects. The work on high-level waste (HLW) contributes to the technical basis for regulations and licensing decisions to enable the NRC to evaluate DOE submittals and ultimately license HLW disposal facilities. Similarly, the work on low-level waste (LLW) is developing corresponding information for LLW facilities covering conventional and alternative disposal methods to facilitate licensing by Agreement States as well as the NRC. Work in the earth sciences is primarily aimed at improving the NRC's understanding of the likelihood and extent of serious damage to nuclear power plants from natural causes (earthquakes, tornadoes, floods). The objectives of the work on radiation protection and health effects are to improve protection for workers against radiation exposure, to better understand the effects of radiation on humans, and to improve radiation measurements and control methods.

HIGH-LEVEL WASTE

In response to the Nuclear Waste Policy Act of 1982, the NRC is developing the capability for evaluating independently and on a continuing basis the adequacy of programs and information being developed by the Department of Energy for the licensed disposal of high-level waste in geologic repositories. The NRC HLW research and standards development program has contributed to the technical basis for this independent evaluation consistent with the milestones for repository development set forth in DOE's draft project decision schedule. If these schedules are to be met for this first-of-a-kind undertaking, it is essential that the NRC have a competent methodology for evaluating the adequacy of DOE submissions as DOE proceeds to develop its plans and conducts its activities related to site screening, selection, and characterization and facility design. Specifically, NRC's HLW research is providing on-going support to NRC's prelicensing consultation with the DOE in order to provide timely guidance to DOE on technical points and issues to be addressed during site characterization, and is developing information specific to NRC's review of DOE's site characterization plans.

At present, the technical basis for NRC's HLW management review capability contains large uncertainties due to the lack of any previous experience with HLW disposal and the very long periods of time involved. In FY 1987, uncertainties will be reduced in selected areas for repositories in tuff and salt through a program of selective experimentation and testing of performance assessment models for the various components of a HLW repository. RES will also continue the research needed to support the day-to-day activities of the licensing office by identifying critical regulatory issues and helping to ensure that technical problems associated with these issues are understood sufficiently to support licensing decisions.

More specifically, FY 1987 efforts will address waste package performance, performance of key features of an underground facility in tuff and salt such as borehole and shaft seals and performance of backfill and packing materials, the groundwater hydrology in and around the repository, radionuclide transport, and performance assessment methodologies.

LOW-LEVEL WASTE

NRC LLW research and standards development is directed at supporting the NRC licensing staff and the States in the regulation of low-level waste disposal. Safety evaluation of engineered enhancements and alternatives to presently used shallow land burial for storage or disposal of LLW will be an important feature of both NRC and State activities in FY 1987. NRC LLW research is critical to establishing a sound technical basis for regulation of and advice to the States on all aspects of LLW disposal, including engineered enhancement and alternatives to shallow land burial. This research effort will maintain both a national safety perspective and a uniform technical basis for efforts by the States to safely dispose of low-level waste. It will also provide the technical basis for implementing requirements of the recent legislation amending the LLW Policy Act.

Specific efforts to be continued or planned for FY 1987 include research to provide information relative to site suitability, facility design, LLW waste form and packaging performance, operational monitoring and postoperational care, and the performance of low-level waste disposal facilities over long periods of time. A key element of the FY 1987 research will be obtaining validation of performance assessment models and computer programs. Such validation is needed to increase confidence in the management of LLW, to minimize the need to apply conservatisms in the regulation of LLW disposal to compensate for uncertainties in the performance of various LLW disposal techniques, and to provide the technical bases against which to evaluate the performance of engineered enhancements or alternatives to conventional shallow land burial. This will allow licensors to give appropriate consideration for the presence of engineered systems, and to minimize licensing delays.

EARTH SCIENCES

Earth Sciences research and standards development encompasses seismology, geology and geotechnical engineering, and the hazards that natural phenomena present to licensed facilities.

During FY 1987, research will continue to better determine the seismic hazards (earthquake magnitude and occurrence intervals) for power plant sites and to predict the response of the site and the plant to earthquakes within the range of magnitudes appropriate to the site, especially for the Central and Eastern United States. This program is closely coordinated with and provides input to the seismic program evaluating reactor design requirements. For some of the older nuclear power plants, it is likely that reevaluation using present knowledge of geology and seismicity could lead to substantially increased values for seismic loads. Uncertainties in the data contribute to difficulties in assessing whether the present seismic safety margins continue to provide adequate protection of the public health and safety. Therefore, the primary objective of the earth sciences research program is to obtain the improved understanding needed to reevaluate the ground accelerations used in establishing these safety margins and to revise Appendix A (Seismic and geological siting criteria for nuclear power plants) to 10 CFR Part 100 appropriately for plants in the Central and Eastern U.S. To accomplish this, the NRC has been funding the operation of seismographic networks in the Central and Eastern U.S. and related geological and geophysical research in the seismically active locations. Research results defining Central and Eastern seismic hazards have been used in license reviews and will be needed to determine whether seismic margin assessments of licensed plants are advisable.

HEALTH EFFECTS AND RADIATION PROTECTION

This program is intended to provide technical information to NRR, IE and NMSS on the health effects of exposure to radiation and standards for public and occupational radiation protection. During FY 1987 radiation protection efforts will include work towards the final version of the general revision of 10 CFR Part 20 (Standards for protection against radiation), guidance on acceptable ways of complying with this new radiation protection regulation and the development of other radiation protection standards needed by the agency and its licensees.

MANAGEMENT DIRECTION AND SUPPORT

	FY 1985 Estimate	FY 1986 Estimate	FY 1987 Estimate
Funds	0	0	0
(Staff)	(24)	(22)	(20)

The staffing requirements for this area consist of the Director's Office, administrative support staff, and the resource control and contract execution staff. The staff provides the Director of Nuclear Regulatory Research with assistance and support in the direction and evaluation of complex technical research projects and program plans, and coordinates, directs, and executes the business matters of the Office, including contractual agreements, budget formulation, fiscal management, personnel administration, long-range research planning, management information systems and travel assistance. Among the staff's most important functions are coordination with the licensing and regulatory groups within NRC to identify their needs and to assure that the research program is responsive to the maximum extent practicable, and coordination with industry and foreign agencies to develop and execute multiparty agreements on safety research.

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PROGRAM TECHNICAL SUPPORT

Program Technical Support

84A.

PROGRAM TECHNICAL SUPPORT

(Dollars are in thousands, except in text, where whole dollars are used; staff numbers are in full-time equivalents.)

Total FY 1987 estimated obligations................................$30,525

Total Funds and Staff

	FY 1985 Actual	FY 1986[1/] Estimate	FY 1987 Estimate
Salaries and Benefits	$ 18,910	$ 18,270	$ 17,250
Program Support	5,140	5,080	6,550
Administrative Support	5,656	5,860	5,720
Travel	1,049	1,080	1,005
Total Obligations	$ 30,755	$ 30,290	$ 30,525
(Staff)	(365)	(355)	(330)

Program Support Funds and Staff

The Program Technical Support program provides direct technical support to agency programs. At headquarters this Program is supported by the Advisory Committee on Reactor Safeguards (ACRS), the Atomic Safety and Licensing Board Panel (ASLBP), the Atomic Safety and Licensing Appeal Panel (ASLAP), the Office of International Programs (OIP), and the Office for Analysis and Evaluation of Operational Data (AEOD). Technical support is provided at both headquarters and the regions by the Office of Investigations (OI), the Office of State Programs (SP) and the Office of the Executive Legal Director (ELD). The allocation of program support funds and staff to each office follows with narrative describing the programs and their needs.

	FY 1985 Actual		FY 1986[1/] Estimate		FY 1987 Estimate	
	Funds	Staff	Funds	Staff	Funds	Staff
ACRS	$ 285	54	$ 250	50	$ 320	42
ASLBP	608	51	822	48	820	38
ASLAP	3	16	10	15	10	14
OI	0	38	0	44	0	44
ELD	74	102	60	96	60	91
OIP	53	29	10	27	50	25
SP	722	35	695	33	700	32
AEOD	3,395	40	3,233	42	4,590	44
TOTALS	$5,140	365	$5,080	355	$6,550	330

1/ Estimates do not reflect the 4.3% reduction required the Balanced Budget and Emergency Deficit Control Act of 1985. The total NRC reduction is $17,974,000.

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 285	$ 250	$ 320
(Staff)	(54)	(50)	(42)

The Advisory Committee on Reactor Safeguards (ACRS), established in 1957 by statute, advises the Commission on potential hazards of proposed or existing reactor facilities and the adequacy of proposed safety standards. Section 29 of the Atomic Energy Act of 1954 also requires that the ACRS advise the Commission with respect to the safety of operating reactors, and perform other duties as the Commission may request. Public Law 95-209 requires the ACRS to provide an annual report to the Congress on the NRC Safety Research Program.

The ACRS reviews requests for preapplication site and standard plant approvals; applications for operating licenses for production and utilization facilities; amendments to operating licenses for power reactors, test reactors, spent fuel reprocessing plants and waste disposal facilities; and assists in matters related to nuclear facilities as outlined in a Memorandum of Understanding with the Department of Energy. The staffing changes reflect a reduced reactor licensing caseload.

The ACRS also recommends and comments on proposed regulatory guides and standards being considered and/or promulgated as the basis for NRC regulatory activities. Since the implementation of the Nuclear Waste Policy Act of 1982, the ACRS has been requested by the NRC to participate in the establishment of related standards and licensing activities on the handling and disposal of radioactive waste, including the interim storage arrangements for this material.

ATOMIC SAFETY AND LICENSING BOARD PANEL

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 608	$ 822	$ 820
(Staff)	(51)	(48)	(38)

The Atomic Safety and Licensing Board Panel (ASLBP) is the statutory adjudicatory office of the agency. Administrative Judges sitting alone and in three-member Boards conduct adjudicatory hearings pursuant to the Administrative Procedure Act, the Atomic Energy Act and the National Environmental Policy Act. Boards hear and decide issues granting, suspending, revoking or amending licenses to construct and operate nuclear power plants and other nuclear facilities. Hearings address matters such as health, safety, environment, and economic issues. Single Administrative Law Judges decide cases in enforcement, civil penalties and antitrust. Currently the workload includes a decreasing caseload of applications by utilities for nuclear power plant operating licenses offset by an increasing number of license amendments and other proceedings which the Commission may direct or the regulations of the agency may require.

ATOMIC SAFETY AND LICENSING APPEAL PANEL

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 3	$ 10	$ 10
(Staff)	(16)	(15)	(14)

The Atomic Safety and Licensing Appeal Panel's three-member tribunals review decisions of administrative law judges and the Atomic Safety and Licensing Boards rendered in (1) proceedings on applications under 10 CFR Part 50; and (2) such other licensing proceedings as the Commission may specify. In discharging this review function, the Panel is governed by the applicable provisions of the Administrative Procedure Act and the agency's

Rules of Practice. The staffing changes reflect a reduced reactor licensing caseload.

OFFICE OF INVESTIGATIONS

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 0	$ 0	$ 0
(Staff)	(38)	(44)	(44)

The Office of Investigations is an independent office which conducts and supervises agency investigations of all allegations of wrongdoing by other than NRC employees and contractors, including reactor licensees, fuel cycle licensees, and materials safety and safeguards and facilities licensees. As operating licenses are issued and the number of applications decreases, the complexion of OI cases is changing. The cases necessarily are becoming more complex because they relate to operating reactors rather than construction. Each case must be thoroughly and completely examined and subsequent findings must be evaluated and disseminated so as to assure prompt attention to safety concerns. All subsequent findings must be evaluated and disseminated so as to avoid undue delay to licensing activities. Quality control standards are being developed, administered, and maintained to oversee the conduct of investigations. Staffing levels reflect the emphasis away from planning to operation. The Commission and appropriate agency offices are apprised of matters under investigation which may affect public health and safety or other aspects of the agency's mission. The Office of Investigations maintains liaison with other agencies and organizations to ensure the timely exchange of information of mutual interest and makes appropriate referrals to the Department of Justice on criminal matters.

OFFICE OF THE EXECUTIVE LEGAL DIRECTOR

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 74	$ 60	$ 60
(Staff)	(102)	(96)	(91)

The staff of the Office of the Executive Legal Director provides legal advice and services to the Executive Director for Operations and the offices which report to that official. They provide legal representation and legal advice to the NRC staff in administrative proceedings involving the licensing of nuclear facilities and materials, enforcement actions, and rulemaking. Specifically, assistance is provided in the areas of health and safety; environmental impact and antitrust aspects of licensing and regulation; research programs; general agency administration, including contracts, patents, personnel, security and labor regulations; safeguards and waste management programs; and the export/import licensing program. Staff levels reflect a reduced reactor licensing caseload.

OFFICE OF INTERNATIONAL PROGRAMS

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 53	$ 10	$ 50
(Staff)	(29)	(27)	(25)

The Office of International Programs was established to develop and direct a program of cooperation with foreign regulatory agencies and to administer the Commission's responsibilities in the areas of nonproliferation, international safeguards and nuclear exports and imports. This Office provides informational support to the Commission and staff on international matters, maintains liaison with other agencies, and performs a key function in facilitating the flow of nuclear health and safety related information between the United States and foreign countries.

It also administers the Commission's export/import licensing procedures, assists in the development of improved international safeguards and physical security arrangements and participates in the ongoing implementation of the Commission's regulations in support of the U.S./International Atomic Energy Agency (IAEA) safeguards agreement.

OFFICE OF STATE PROGRAMS

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 722	$ 695	$ 700
(Staff)	(35)	(33)	(32)

The Office of State Programs manages a program of cooperation and liaison with States, local governments, Indian tribes and interstate organizations. The office coordinates regulatory issues with states concerning high-level waste (under the Nuclear Waste Policy Act), low-level waste (under the Low-Level Radioactive Waste Policy Act), and transportation of radioactive materials. It also administers NRC's program with 28 Agreement States, which in turn administer about 13,000 licenses involving the regulation of certain classes of radioactive materials, including uranium milling and low-level radioactive waste disposal.

The office also administers the Price-Anderson Act, which provides liability insurance and government indemnity for nuclear accidents, and administers activities relating to nuclear property insurance, financing decommissioning, tracking state regulatory incentives for nuclear plants, and monitoring of TMI-2 cleanup financing. It provides guidance, training and assistance to State and local governments in radiation control and coordinates with other NRC offices and agencies having State and interstate responsibilities.

The Office also supports, along with States and other agencies, the Conference of Radiation Control Program Directors, Inc. (an association of State Radiation Control Program Directors).

OFFICE FOR ANALYSIS AND EVALUATION OF OPERATIONAL DATA

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 3,395	$ 3,233	$ 4,590
(Staff)	(40)	(42)	(44)

The Office for Analysis and Evaluation of Operational Data collects, analyzes, and disseminates information about operating experience from all agency licensed activities. This Office reviews operating experience to identify significant events or situations that warrant detailed evaluation and then studies those significant events or situations to determine the lessons of experience and safety concerns that warrant regulatory attention.

Specific tasks and activities of the Office are the following:

- Collect, screen, analyze, and feed back operating experience to agency staff, the nuclear industry, and the public on all agency licensed activities.
- Screen U.S. and foreign operational events for significance and systematically and independently analyze those events.
- Analyze operational experience data to identify trends and patterns that indicate potential safety problems.
- Make recommendations for agency action for resolution of safety issues detected through these activities.
- Analyze all licensee event reports, recommend to the Commission which events constitute abnormal occurrence and document those occurrences on a quarterly basis to Congress and the public.
- Maintain operational data storage and retrieval systems, including: (1) development and operation of several data bases of selected operational experience data, and (2) coordination with the Institute of Nuclear Power Operations (a nuclear-industry-funded organization) which supports and manages the Nuclear Plant Reliability Data System.
- Report appropriate U.S. events to the International Nuclear Energy Agency's incident reporting system.

- Serve as contact point for data collection in relation to the agency staff, the Advisory Committee on Reactor Safeguards, and industry groups.

- Administer the Incident Investigation Program for significant operational events, including the development of agency guidance, personnel rosters, and training programs, and provide the necessary support to the Incident Investigation Teams (IITs).

The screening work requires the review of 3,000 reactor Licensee Event Reports per year, as well as the review of extensive documentation of events involving foreign reactors, inspection reports, and U.S. industry reports. In the evaluation of non-reactor events associated with the use, transportation, safeguarding and disposal of nuclear materials, about 6,000 reports are reviewed each year that are received from approximately 8,300 licensees. These reports involve operational events such as overexposures to radioactive materials, spills, or medical misadministrations. In addition, the reports of 8,000 Agreement State licensees are reported to the agency semiannually by the Agreement States.

The improved data bases associated with this activity are now sizeable and collection mechanisms are in place. It is now incumbent on the NRC to analyze trends and patterns based on these data. The lessons of operating experience often cannot be derived from viewing a single event; they must be developed by associating events. Through trends and patterns an evolving picture can be developed that can lead to appropriate corrective actions being identified and taken before the situation becomes a serious incident. It is toward this end that the data bases have been established. The analyses that are now possible to identify the trends and patterns and to integrate the risk perspective into the analyses require the additional staff requested. Staff increases in FY 1987 are to provide increased trends and patterns analyses and human factors analysis capability.

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PROGRAM DIRECTION AND ADMINISTRATION

Program Direction and Administration

94A.

PROGRAM DIRECTION AND ADMINISTRATION

(Dollars are in thousands, except in text, where whole dollars are used; staff numbers are in full-time equivalents.)

Total FY 1987 estimated obligations................................$43,115

Program Total Funds and Staff

	FY 1985 Actual	FY 1986[1] Estimate	FY 1987 Estimate
Salaries and Benefits	$ 30,700	$ 29,800	$ 29,480
Program Support	1,951	1,875	1,800
Administrative Support	10,374	11,097	11,290
Travel	545	570	545
Total Obligations	$ 43,570	$ 43,342	$ 43,115
(Staff)	(729)	(703)	(681)

Program Support Funds and Staff

The Program Direction and Administration program collectively provides overall policy direction, resource management, administration and logistic support for the agency. The staff offices are the Commission (OCM), Secretary (SECY), Inspector and Auditor (OIA), General Counsel (OGC), Public Affairs (OPA), Policy Evaluation (OPE), Congressional Affairs (OCA), Executive Director for Operations (EDO), Small and Disadvantaged Business Utilization and Civil Rights (SBDU/CR), Resource Management (RM), and Administration (ADM). The allocation of program support funds and staff to each office follows with narrative describing the programs and their needs.

	FY 1985 Actual		FY 1986[1] Estimate		FY 1987 Estimate	
	Funds	Staff	Funds	Staff	Funds	Staff
OCM	$ 0	34	$ 40	36	$ 100	36
SECY	325	30	230	31	350	30
OIA	0	27	0	26	0	26
OGC	6	29	22	31	29	30
OPA	11	17	10	18	10	17
OPE	0	18	25	17	60	14
OCA	0	10	1	9	1	8
EDO	0	23	50	21	50	20
SDBU/CR	51	9	375	8	150	7
RM	1,558	133	1,122	127	1,050	124
ADM	0	399	0	379	0	369
TOTALS	$1,951	729	$1,875	703	$1,800	681

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[1] Estimates do not reflect the 4.3% reduction required by the Balanced Budget and Emergency Deficit Control Act of 1985. The total NRC reduction is $17,974,000.

THE COMMISSIONERS AND STAFF

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 0	$ 40	$ 100
(Staff)	(34)	(36)	(36)

The Office of the Commissioners is the governing body which must exercise the overall NRC responsibilities. This body provides fundamental policy guidance to assure that the civilian use of nuclear energy is regulated in a manner consistent with the public health and safety, environmental quality, national security and antitrust laws.

OFFICE OF THE SECRETARY

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 325	$ 230	$ 350
(Staff)	(30)	(31)	(30)

The Office of the Secretary provides general management services to support the Commission and to implement Commission decisions; advises and assists the Commission and staff on the planning, scheduling and conduct of Commission business; prepares for and records Commission meetings; manages the Commission staff paper system and monitors the status of all items requiring action; integrates automated data processing and office automation initiatives into the Commission's administrative system; maintains a forecast of matters for future Commission consideration; processes and controls Commission correspondence; maintains the Commission's official records; maintains the official Commission adjudicatory and rulemaking dockets, and serves Commission issuances in all adjudicatory matters and public proceedings; administers the NRC historical program; and directs and administers agency's NRC Public Document Room.

Program support funds provide verbatim transcription services for Commission meetings.

OFFICE OF INSPECTOR AND AUDITOR

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 0	$ 0	$ 0
(Staff)	(27)	(26)	(26)

The Office of Inspector and Auditor functions as the agency Inspector General, providing the Commission with an independent review and appraisal of programs and operations. The office is responsible for developing policies and standards that govern the financial and management audit program; planning, directing and executing the long-range, comprehensive audit program; conducting and reporting on investigations and inspections, as necessary, to ascertain and verify the facts with regard to the integrity of internal agency operations, employees, contractors, organization's programs and activities; and referring suspected or alleged criminal violations concerning NRC employees or contractors to the Department of Justice.

It also administers the Commission's "open door" policy; serves as point of contact with the General Accounting Office (GAO); and maintains liaison with GAO and Government audit and law enforcement agencies.

OFFICE OF GENERAL COUNSEL

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 6	$ 22	$ 29
(Staff)	(29)	(31)	(30)

The Office of General Counsel is the Commission's chief legal advisor and provides legal advice on all issues considered by the

Commission, including the discharge of its quasi-judicial responsibilities, rulemaking, and the development of substantive policy matters. The OGC staff represent the Commission in Courts of Appeal proceedings to review Commission orders and rules, and in cooperation with the Department of Justice, represent the Commission in court proceedings affecting the agency program in the Federal District Courts and Supreme Court. OGC's Federal Court litigation caseload has increased substantially and is expected to continue to increase.

The office also provides legal advice on legislative matters of concern to the agency, including drafting of legislation, preparation and review of testimony, and preparation and transmission of statements of views on proposed legislation.

Substantial resources are also being devoted to implementation of the Freedom of Information Act. In addition, the Commission has reserved for itself the determination whether Licensing Board decisions authorizing full power operation should be made immediately effective. Each of the immediate effectiveness reviews requires substantial effort, particularly in contested cases. The staff also provides legal advice to the Office of Investigations, including attorneys to participate in certain major field investigations.

OFFICE OF PUBLIC AFFAIRS

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 11	$ 10	$ 10
(Staff)	(17)	(18)	(17)

The Office of Public Affairs issues public announcements from both headquarters and the regional offices; responds to telephone inquiries from the news media and the public; and responds to letters from the media and the public, including the bulk of the NRC referrals from the White House. In addition, the staff arranges press conferences in the Washington area, as well as in the regions in the vicinity of nuclear facilities, and coordinates requests for Commission speakers before civic groups and other organizations interested in the role of the agency.

The office also assists the licensing boards, the appeal boards and the Advisory Committee on Reactor Safeguards whenever hearings and meetings are held in which a high degree of public and press interest is evidenced; advises the Commission and senior staff on public affairs impacts of planned programs and other activities; and advises and assists the Commission and the public on the conduct of public meetings and rulemaking hearings of broad general interest.

OFFICE OF POLICY EVALUATION

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 0	$ 25	$ 60
(Staff)	(18)	(17)	(14)

The Office of Policy Evaluation advises the Commission on a broad range of substantive policy matters to enhance the information base on which Commission decisions are made. The Office provides the Commission with an independent evaluation of program policy objectives; reviews staff papers; and provides independent technical evaluation of issues presented to the Commission, including cases under adjudication. Use of outside consultants is anticipated for the development of the Five Year Plan and other matters directed by the Commission.

OFFICE OF CONGRESSIONAL AFFAIRS

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 0	$ 1	$ 1
(Staff)	(10)	(9)	(8)

The Office of Congressional Affairs assists and advises the Commission and senior staff on Congressional matters, coordinates agency Congressional relations activities and is the principal liaison for the Commission with Congressional committees and members of Congress.

The primary objective is to assure that the Congress, through its designated oversight committees, is kept fully and currently informed of agency activities and that Congressional requests and inquiries are responded to promptly. The Office provides the Commission and senior NRC staff with relevant and current information as to major legislative activities likely to affect the agency. Additionally, the office seeks to assure that individual members of Congress are kept currently and adequately informed of significant NRC licensing activities that impact their respective states and districts.

OFFICE OF THE EXECUTIVE DIRECTOR FOR OPERATIONS

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 0	$ 50	$ 50
(Staff)	(23)	(21)	(20)

The Office of the Executive Director for Operations supervises and coordinates operational activities and policy development of both line and staff offices and implements the Commission's policy directives pertaining to these offices.

OFFICE OF SMALL AND DISADVANTAGED BUSINESS UTILIZATION AND CIVIL RIGHTS

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 51	$ 375	$ 150
(Staff)	(9)	(8)	(7)

The Office of Small and Disadvantaged Business Utilization/ Civil Rights is responsible for implementing and executing functions and duties under three (3) program authorities:

Small and Disadvantaged Business Utilization Program - P.L. 95-507, Section 8 and 15 of the Small Business Act of 1958, as amended. This function required: the location of small businesses capable of performing NRC contractual requirements; the conduct of outreach efforts designed to stimulate greater small business interest in NRC programs; and the dissemination of information to small businesses interested in Agency contracting procedures.

Civil Rights Program - Civil Rights Act of 1964, as amended, implemented by 29 CFR Part 1613 of the EEOC regulations. This function requires: obtaining and maintaining equal opportunity within the NRC; developing and preparing the Agency's Affirmative Action Plan; advising and assisting in recruitment plans and activities; providing counseling and investigations of discrimination complaints; providing EEO training for all Agency employees; coordinating activities associated with all Agency civil rights matters; interacting with community groups concerned with equal opportunity and human rights in the workplace; and implementing the Agency's Federal Financial Assistance Program, under Section 174 of the Atomic Act of 1954, as amended.

Federal Women's Program - This function aims to expand and enhance opportunities for NRC women employees, and to reform policies and practices which serve as barriers; identifies underrepresentation and underutilization of women in the workforce, and recommend corrective action; participates in internal personnel management evaluation and recruitment actions; and maintains communication between women's organizations and Agency management.

OFFICE OF RESOURCE MANAGEMENT

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 1,558	$ 1,122	$ 1,050
(Staff)	(133)	(127)	(124)

The Office of Resource Management provides budgetary and fiscal management for the agency, including the development and maintenance of a financial control system and a system of accounting designed to conform to the standards prescribed by the Comptroller General; management information and analyses for a variety of users within the agency; and is the office responsible for developing and maintaining the agency's principal management information systems and centralized automatic data and wordprocessing.

It provides analyses to assess the relationship between program workload and resource allocation; is the agency focal point for cost analyses; collects, reviews and issues various periodic and special reports on nuclear power plant data reported by licensees for use by agency offices, Congress, other parts of the government and the public at large; and manages and coordinates special projects, including Congressionally mandated reports, such as the agency's Annual Report.

The Office has the following functions:

BUDGET AND ANALYSIS

This work consists of developing and maintaining policies and procedures and performing the operations needed for formulating and obtaining approval for agency budgets; developing and administering agency authorization and appropriation funding legislation, and presenting budget estimates and information to agency management, the Office of Management and Budget, and Congress; designing and developing systems and criteria for resource planning; validating staff resource requirements (people and funds) and utilization; developing regulatory cost analyses; and maintaining liaison with the Office of Management and Budget and Congress.

ACCOUNTING AND FINANCE

The agency's financial management responsibilities are carried out by developing and applying policies, principles, standards, and procedures for financial and cost accounting and reporting systems; maintaining accounting and internal controls over agency appropriations; maintaining centralized payroll and travel accounting and reporting functions; maintaining centralized governmental and commercial contractor accounting and reporting; developing and maintaining the agency's financial management information systems; maintaining liaison with the General Accounting Office, the Treasury Department, and other agencies on financial procedures and related matters; and developing policies, standards, and practices governing cost principles and other financial arrangements under agency contracts and participating in contractor selections and negotiations.

AUTOMATED INFORMATION SERVICES

The agency's automated data and word processing functions, including the procurement of equipment and software, provide support throughout the agency in developing automated systems, applications, policies and procedures, quality assurance and oversight responsibility. Management is also provided for interagency and contractor computer time-sharing contracts and coordination of automatic data processing activities with other Federal agencies.

OFFICE OF ADMINISTRATION

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 0	$ 0	$ 0
(Staff)	(399)	(379)	(369)

The Office of Administration provides the administrative and logistical support services for headquarters and some services for the regional offices. The services provided to all segments of the agency include: administration of the NRC Personnel Management Program which includes recruitment and staffing, position classification and evaluation, labor relations, organization and management analysis and managing the Cooperative Education Program; contracting and purchasing activities for the agency; transportation and travel services; agency telecommunications services, including facsimile, radio, teletype, telephone, data transmission and the Emergency Notification System; space acquisition and utilization including planning for consolidation of space into fewer buildings; providing for the security of facilities and safeguarding of classified and sensitive unclassified documents; technical information management and document control services for the agency; administration of the Freedom of Information Act and Privacy Act activities; and administration of a system of 112 local public document rooms throughout the United States.

It also provides printing and reproduction services for the agency; management of the headquarters administrative support funds; administration of the Facilities and Materials License Fee Program; Management Development and Training Support; direction of the Occupational Health and Safety Program; and other agency-wide services, such as interviewee and change-of-station travel and the Agency's Alcohol and Drug Abuse Program.

The Office has the following functions:

ORGANIZATION AND PERSONNEL

Programs for personnel management and organization activities, include staffing and placement services, recruitment, position classification and evaluation, personnel policy and program development, Federal labor relations and employee relations services, organization and staffing analyses, management analyses, and the agency's position management program; and provides secretarial services, liaison, and support to the Executive Resources Board and its subgroups.

FACILITIES AND OPERATIONS SUPPORT

This function develops and administers the agency telecommunications activities; represents the agency in liaison with Federal and State agencies on telecommunications matters; provides mail and messenger services; issues and processes travel authorization requests; develops and administers programs for space acquisition and utilization, motor vehicle operation, building management, and transportation services; and develops and administers programs for property management, supply and warehouse operations, and office and equipment moves.

TECHNICAL INFORMATION AND DOCUMENT CONTROL

This function provides centralized agencywide publication control and processing, technical writing and editing service, and translation service; publishes agency books, regulatory and technical reports, pamphlets and periodicals; provides direction and coordination for agencywide provision of document composition, printing, graphics, photography, and audiovisual and related services; provides agencywide service for receipt, dissemination, storage and retrieval of agency publications; and provides for paperwork management under the Paperwork Reduction Act, the Federal Records Act, and related Federal statutes.

It maintains centralized, official reactor licensing records, classified documents, and accountability records; acquires and maintains library collections to support official agency actions; and provides automated reports processing and proofreading service agencywide, including, electronic communication with the regional offices and contractors.

RULES AND RECORDS

This function develops policies, procedures and rules for implementing the Freedom of Information Act, Privacy Act, and the Regulatory Flexibility Act; develops and reviews amendments to agency regulations and petitions for rulemaking; provides advice and assistance to offices and the public regarding regulations and procedures for filing petitions for rulemaking; and directs and coordinates Local Public Document Room activities near reactor sites throughout the United States.

CONTRACTS

This function develops and implements agencywide contracting and financial assistance policies and procedures; and directs and coordinates contracting and financial assistance activities, including selection, negotiation, administration and closeout of contracts. It provides advice and assistance to program officials on procurement regulations and requirements and methods of meeting program objectives consistent with such requirements; executes and modifies contracts, financial assistance relationships and interagency actions; settles claims and terminations; and performs other normal duties of a contracting office specified in the Federal Acquisition Regulations.

SECURITY

This function administers the agency's overall security program, including the safeguarding of Restricted Data and National Security Information documents or material (e.g., classified matter) at Headquarters facilities, Regional Offices, contractor, licensee and other plants containing such matter; the safeguarding of sensitive intelligence; and physical protection at NRC Headquarters, Regional Offices, and other agency locations; and the processing and maintenance of access authorizations (clearances) for agency employees, consultants, contractors, and others.

LICENSE FEE MANAGEMENT

This function administers the agency's license fee program whereby applicants for licenses are assessed the cost of reviewing and approving the licenses; develops policies and procedures for cost recovery and fees for Commission consideration; prepares fee regulations, fee schedules, and procedures; periodically reviews schedules for updating and modification; and, annually analyzes agency licensing costs for determining fee bases.

It also institutes enforcement procedures when appropriate to assure fee payments; and works with other Government agencies to provide consistency in fee programs.

MANAGEMENT DEVELOPMENT AND TRAINING

This function plans and develops policies and programs for the training and development of agency executives and Senior Executive Service candidates; provides management and supervisory training and development programs to improve managerial performance; administers the Intern and Upward Mobility programs; and develops training and education programs in response to Commission, statutory, and interagency requirements.

It also assists in identifying training needs and programs; develops and administers the agencywide training budget (excluding the Reactor Training Center programs); and provides career development counseling.

OCCUPATIONAL SAFETY AND HEALTH

This function administers the agencywide occupational health and safety program to provide a safe working environment for employees and the public using agency facilities.

SPECIAL SUPPORTING TABLES

Special Supporting Tables

LEGISLATIVE PROGRAM PROJECTIONS

(Dollars in Millions)

	Actual	Estimate					
	FY 1985	FY 1986[1/]	FY 1987	FY 1988	FY 1989	FY 1990	FY 1991
NRC Total Budget Authority	$448	$418	$405	$405	$405	$405	$405
Budget Outlays	$468	$442	$418	$406	$405	$405	$405

1/ Estimates for FY 1986 through FY 1991 do not reflect the 4.3% reduction required by the Balanced Budget and Emergency Deficit Control Act of 1985. The total NRC reduction in FY 1986 is $17,974,000.

Consulting Services[1]

Account Title	Type		Obligations		
			FY 1985	FY 1986[2]	FY 1987
Nuclear Reactor Regulation	Contractual Services		$ 50	$ 50	$ 40
	Personnel Appts.		68	75	75
	Advisory Committee Consultants		0	0	0
		Total	$118	$125	$115
Nuclear Material Safety and Safeguards	Contractual Services		$ 0	$ 0	$ 0
	Personnel Appts.		45	45	45
	Advisory Committee Consultants		29	33	33
		Total	$ 74	$ 78	$ 78
Inspection and Enforcement	Contractual Services		$ 0	$ 0	$ 0
	Personnel Appts.		0	0	0
	Advisory Committee Consultants		0	0	0
		Total	$ 0	$ 0	$ 0
Nuclear Regulatory Research	Contractual Services		$ 0	$ 0	$ 0
	Personnel Appts.		0	0	0
	Advisory Committee Consultants		0	0	0
		Total	$ 0	$ 0	$ 0
Program Technical Support	Contractual Services		$ 0	$ 0	$ 0
	Personnel Appts.		0	0	0
	Advisory Committee Consultants		93	130	130
		Total	$ 93	$130	$130
Program Direction and Administration	Contractual Services		$ 0	$ 0	$ 0
	Personnel Appts.		100	100	100
	Advisory Committee Consultants		0	0	0
		Total	$100	$100	$100
Total Nuclear Regulatory Commission	Contractual Services		$ 50	$ 50	$ 40
	Personnel Appts.		213	220	220
	Advisory Committee Consultants		122	163	163
		Total	$385	$433	$423

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[1] Dollars are in thousands, except in text, where whole dollars are used.

[2] Estimates do not reflect the 4.3% reduction required by the Balanced Budget and Emergency Deficit Control Act of 1985. The total NRC reduction is $17,974,000.

MAJOR PROGRAM AREAS

NUCLEAR REACTOR REGULATION

Consulting services are used to obtain advice/opinions on highly complex and controversial areas on an intermittent basis to enhance the quality and diversity of views and to provide outside independent viewpoints that lend greater credibility and technical support to agency licensing positions. Personnel appointments provide engineering and scientific expertise not otherwise available to NRR.

NUCLEAR MATERIAL SAFETY & SAFEGUARDS

Consulting services are used to provide (1) technical advice on fuel processing operations, including high-level waste solidification activities; (2) advice on review of critical technical data associated with repository site performance and evaluation; and (3) assistance to staff in evaluating low-level waste generation, processing and storage from the disposal perspective to ascertain long-term burial ground performance. Advisory Committee expenses include the Advisory Committee on Medical Uses of Isotopes which considers medical questions referred to it by NRC staff, renders expert opinion regarding medical uses of radioisotopes, and advises on matters of policy.

PROGRAM TECHNICAL SUPPORT

Consulting services will be used to perform a feasibility study to determine the advisability of using an automated litigation support system to support the hearing process. Advisory Committee consultants assist the membership of the Advisory Committee on Reactor Safeguards (ACRS), established by statute in 1957. The ACRS advises the Commission on potential hazards of proposed or existing reactor facilities and prepares a report to Congress as required by Public Law 95-209 on the NRC Safety Research Program. The consultants assist the Advisory Committee in conducting project reviews, OL reviews, generic reviews, and safety assessments. In addition, these consultants are required to assist the Committee on matters pertaining to high-level radioactive waste management.

PROGRAM DIRECTION & ADMINISTRATION

Personnel appointments provide the agency with advice and assistance (1) to the public concerning the retrieval and maintenance of documents in the Local Public Document Rooms; (2) in evaluating current and proposed automated document control systems, and in codes, standards, and reports collection; (3) on security clearance applications; and (4) to evaluate proposed revisions for security-related standards, procedures, rules, and regulations.

U.S. NUCLEAR REGULATORY COMMISSION
SUMMARY OF HEADQUARTERS-REGIONAL RESOURCES

(Dollars are in thousands; staff numbers are in full-time equivalents.)

	FY 1985 Actual		FY 1986 Estimate 1/		FY 1987 Estimate	
	Dollars	(Staff)	Dollars	(Staff)	Dollars	(Staff)
Headquarters Programs						
Nuclear Reactor Regulation	$ 81,484	(633)	$ 78,620	(638)	$ 73,480	(589)
Nuclear Material Safety and Safeguards	35,907	(300)	37,225	(315)	35,700	(305)
Inspection and Enforcement	36,615	(236)	36,734	(245)	36,306	(233)
Nuclear Regulatory Research	149,959	(226)	134,710	(207)	113,460	(180)
Program Technical Support	29,604	(347)	29,170	(338)	29,385	(313)
Program Direction and Administration	43,570	(729)	43,342	(703)	43,115	(681)
Subtotal	$377,139	(2,471)	$359,801	(2,446)	$331,446	(2,301)
Regional Programs						
Nuclear Reactor Regulation	$ 5,037	(78)	$ 5,140	(78)	$ 6,360	(94)
Nuclear Material Safety and Safeguards	4,119	(62)	3,745	(55)	3,820	(55)
Inspection and Enforcement	57,971	(869)	61,506	(895)	62,234	(902)
Program Technical Support	1,151	(18)	1,120	(17)	1,140	(17)
Subtotal	$ 68,278	(1,027)	$ 71,511	(1,045)	$ 73,554	(1,068)
Total Programs						
Nuclear Reactor Regulation	$ 86,521	(711)	$ 83,760	(716)	$ 79,840	(683)
Nuclear Material Safety and Safeguards	40,026	(362)	40,970	(370)	39,520	(360)
Inspection and Enforcement	94,586	(1,105)	98,240	(1,140)	98,540	(1,135)
Nuclear Regulatory Research	149,959	(226)	134,710	(207)	113,460	(180)
Program Technical Support	30,755	(365)	30,290	(355)	30,525	(330)
Program Direction and Administration	43,570	(729)	43,342	(703)	43,115	(681)
TOTAL	$445,417	(3,498)	$431,312	(3,491)	$405,000	(3,369)

1/ Estimates do not reflect the 4.3% reduction required by the Balanced Budget and Emergency Deficit Control Act of 1985. The total NRC reduction is $17,974,000.

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U.S. NUCLEAR REGULATORY COMMISSION

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12 SUPPLEMENTARY NOTES

13 ABSTRACT (200 words or less)

is report contains the fiscal year budget justifications to Congress. The budget timates for salaries and expenses for fiscal year 1987 provide for obligations of $405,000,000 to be funded in total by a new appropriation.

14 DOCUMENT ANALYSIS - a KEYWORDS/DESCRIPTORS

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